

UNITED STATES

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NUCLEAR REGULATORY COMMISSION

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| | In the Matter of: : |
| | BRIFFING ON CRYSTAL RIVER . |
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| 9 | Room 1130, Eleventh Floor |
| 0 | 1717 H Street, N.W. |
| | Washington, D.D. |
| | Tuesday, March 4, 1980 |
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| | The Commission met, pursuant to call, for the |
| . | above-entitled matter. |
| - | BEFORE : |
| 4 | John F. Ahearne, Chairman |
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| a | Peter A. Bradford, Commissioner |
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CHAIRMAN AHEARNE: Good morning. For those of you who are concerned about the legal aspect, this is not a Commission Meeting, because there is only one Commissioner.

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When, if a quarum arise, we will then have to take a vote to hold it, no less than one weeks notice. We work under some arcane procedures.

What we--what I am going to hear this morning is a report from the staff that went down to the Crystal River Plant led by Mr. O'Reilly, the Regional Director of the region of which the Crystal River Plant is located and he has been down there for a while with a crew of NRC people. I am sure that many of us are very interested in finding out what he has to say, so let me--I will first ask Victor Stello who is the Director of I&E whether he has any opening remarks and then go on from there.

MR. STELLO: I guess I would like to know, briefly, 17 during our last discussion, the briefing on Crystal River, 13 there were a number of questions that were raised. These 19 were formalized in a semorandum from the Secretary. We intend 20 to cover-up the seven items that were identified for further 11 information, the first five of these which have a suspense 2 date up to day, and we will be giving you the answers to the 22 extent that they are available on those five particular issues 14 in the briefing this morning of the incorporated--with the 11

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briefing, and I think the answers will be farely obvious, but I have asked Mr. O'Reilly when he is going through the briefing that he makes reference to the particular the five various and the specifically, the one that we wanted to have covered as a result of him looking into the matter and some follow-on work that was done following Crystal River. And without further introduction, Jim, why do not you begin?

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MR. O'REILLY: Okay. I would like--do you have a copy of that briefing paper and slides?

CHAIRMAN AHEARNE: No. Thank you.

MR. O'REILLY: I have broken up the briefing, Mr. Chairman, into the description of the Operational Reactor Oriented Event and then I was going to discuss the emergency response and how everything worked in that area, and then I was going to talk on the lessons learned from this particular incident, based on ordinance of emergency response.

The technical issues, as you know, sir, is being addressed at a meeting today being held in Bethesda with Licensing and I&E and with the B&W operating facilities and B&W.

Before I start, I would like to give you a status report on the plant, itself. The plant is in Cold shutdown status. Its primary pressure is at 55 pounds, the primary temperature is at 89 degrees and the amount of water that

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was spilled into the containment has, oh, almost been processed, there is a normal level in the sump and they ought to be finishing the processing order today or tomorrow.

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They have had a mini-perge going on in the containment and today or tomorrow they should start the high-perge of the containment. These activities are being monitored, obviously, by the licensee and by the NRC.

I started off and the first slide I have I provide a general description of the Crystal River site and I would note that there are or will be five units at the Crystal River site--

CHAIRMAN AHEARNE: I think you are one slide behind or ahead.

MK. O'REILLY: Could I have the next slide, please? There two fossil units, one that which was operating, sir, in the event. Unit Three in the nuclear unit and Units Four and Five are currently under construction.

The site is located seven miles northwest of Crystal River, Florida and 80 miles north of Tampa. It is a B&W facility and it operates 825 megowatts electric.

On the next slide, sir, I have provided a description of the primary system and I have included in there the, on the bottom left, you can see that is the reactor coolant drain tank. It is the tank that had the

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rupture disc lift and steam and coolant water, 43,000 gallons were discharged to the containment. On the upper left you have the picture of the pressurizer and there it shows, under M the motor operative valve, the safety relief valve, the PORV valve, and the other indications are the code safety valves. Two code safety valves and one power operated relief valve.

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Now, following that basic description, I would . 3 like to go into describing the sequence of events that 4 o urred. Now this sequence of events, Mr. Chairman, is taken from a very extensive sequence. We must have 10 or 15 pages of detailed alarms that were going through. What we done here is selected what we consider the key events and so that we would not have too many items, you know, I think confuse the issue.

At 14:23:21, the time of the incident, that had an instrument bus failure and this instrument bus failure automatically and inproperly opened up the PORV and the spray valves. There was no increase of pressure, this valve just opened up because of the plus side of the N&I bus, the X train faulted, and this fault drove the valve open.

CHAIRMAN AHEARNE: You mean gave us a various signal?

MR. O'REILLY: No, sir. It was the failure of the positive side of the X train, actualy would and does on test

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drive the valve open. So the failure of the X train actually t drove the PORV valve open; it stayed open and the spray 1 valve opened. That condition was demonstrated by test, 1 also, following the event. 1 CHAIRMAN AHEARNE: And the spray valve opening is 5 also triggered by the same failure? á MR. O'REILLY: Yes, sir. 7 CHAIRMAN AHEARNE: Now what caused the instrument 8 bus failure? 4 MR. O'REILLY: The exact cause of the instrument 10 bus failure is not known at this time. They have been 11 testing the system quite extensively Saturday and Sunday 12 and they cannot find, at this time, the fault and investi-13 gations are continuing. In the slide, I will show you a 14 breakdown, in a future slide I will show you where we 15 expect the fault to occur. It occurred downstream of the 16 power supplies of the X train. 17 CHAIRMAN AHEARNE: There was, at least, some 18 suggestion that perhaps maintenance had been -- was being done 19 at the time of where the fault was. 20 MR. O'REILLY: Yes, sir. There was maintenance 21 being conducted in the non-nuclear instrumentation cabinets 22 at the time of the event. The operator -- the instrument 27 technician who was working, has been interviewed by us and 24 by the licensee and we believe, although we have not 15

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dismissed it, that his action did not cause this failure. He was working in the Y train. Now, by not causing any, we do not believe he was in the X train cabinet, but there may, of course, be some connection between the work of the Y train and X train, something electrically may have occurred and this has not been dismissed.

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Now following the instrumentation --

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CHAIRMAN AHEARNE: So, at the moment, really, we have no good idea of what caused the X train's failure?

MR. O'REILLY: We have no--we have not identified the the cause of the fault on the X train. We have introduced faults into the X train that caused the same problem. So, we have not found the fault. So, the fault may have cleared itself, that may be a very difficult job to find it.

At 14:23:35, shortly after that, we had an automatic reactor trip and a turbine trip. And this was caused by a high reactor pressure and what occured here, of course, when you lost the X bus, we in effect lost some of the intelligence being provided by the ICS system. And the ICS system cut back the feedwater pumps and the reactor overheated , the pressure increased.

CHAIRMAN AHEARNE: Was that cut back because some of the instruments went into--go to mid-range as the prov was dropped.

MR. O'REILLY: Yes, sir.

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CHAIRMAN AHEARNE: So then the ICS system was responding correctly, has those been appropriate measure.

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MR. O'REILLY: That is correct. The ICS performed in accordance with the design of the system and that action, though, did cause that action to occur and it also sensing this which was control rods to the reactor, increased in pressure. It scrammed and then with following the scram, and, of course, we still had the open PORV value and the spray value, the reactor did decrease in pressure and---

CHAIRMAN AHEARNE: The high pressure side--the reason the pressure went up is cutting back in feedwater?

MR. O'REILLY: Well, in effect, the removal of the heat, the operator was operating at a 100 percent power and when you cut back in feedwater you loose to some degree your heat sink, and this would increase the temperature of the prime rate coolant. You also--the ICS would signal for withdraw of control rods, which would add heat and this, of course, increase the temperature of the pressure and then you would trip on high reactor pressure.

CHAIRMAN AHEARNE: So the reactor trip was not caused by the turbine trip. That is, it was not that the ICS tripped the turbine and then that--

> MR. O'REILLY: The ICS does not trip anything. The ICS caused the increase in pressure and the reactor and turbine trip simultaneously; one trips the other.

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Now, while this was happening, the PORV being open, and you will see the tight time schedule here; 14:23:21 when the power failed--

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CHAIRMAN AHEARNE: I am sorry. Let me keep on that one point. Is the primary driving cause for the increase pressure, the power run up of the reactor that withdraw the control rods.

MR. O'REILLY: The loss of the heat sink, because that all happened so quickly, you would not have had much of a reaction in that short time sequence.

MR. STELLO: As I recall, they went to mid-range, and feedwater went down to 50 percent so you are operating at a point which you had only 50 percent of the feedwater being supplied to the steam generators, which is a very large mismatch in power, which would cause the heat up of the primary system. So the very large difference in power generation is not the 2 or 3 percent, what was it 3 percent in the--is when how much of an increase they had in power because of the--

MR. O'REILLY: It was very small.

MR. STELLO: --very small. But, the big mismatch is in the balance of the steam generator.

MR. O'REILLY: It should be noted here, that although the PORV failed to open, we lost it on nuclear instrumentation that the PORV probably would have operated at

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this time also, it is close. The PORV is scheduled to 1 operate at 2450, a scram--a high pressure scram is what 1 2400 pounds; isn't it? Whether it would have opened is 1 sort of debatable. 4 CHAIRMAN AHEARNE: What pressure did it get to? 5 MR. O'REILLY: 2400 pounds is the highest á pressure that we have recorded. 7 CHAIRMAN AHEARNE: And the new set point for the 3 PORV is 2450? 4 MR. O'REILLY: You say what, sir? 10 CHAIRMAN AHEARNE: And you say that new PORV 11 set point is 2450? 12 MR. O'REILLY: Right, 2450. 13 CHAIRMAN AHEARNE: Now, when driver open by that 14 initiating event, does it stay open? 15 MR. O'REILLY: It stays open. 14 CHAIRMAN AHEARNE: As a result of the fault or 17 does did it stick open? 18 MR. O'REILLY: No, it was a result of the fault. 19 It was drove open and stayed there in the loss of the control 20 power. 21 Now, at 14:25:50 the PORV was operated by the 22 operator. It was noted to be open, this is, you know, 22 following the scram. 14 CHAIRMAN AHEARNE: Right. 25

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1 MR. O'REILLY: And that is also --CHAIRM." AHEARNE: By isolated, he closed the 1 block valve? 1 MR. O'REILLY: He closed that valve marked M, the 4 block valve. M marked M on the chart I desribed before. 5 Now, the operator, also, at this time, is noticing á the increase in the high and reactor drain tank level alarm, 7 this is the water from the PORV discharging to the RCDT. 8 At 12:61:41, this is the point where you got 4 down to the --10 CHAIRMAN AHEARNE: Well, let see now. You also 11 say that low pressure. 12 MR. O'REILLY: Yes, sir. This is following the 15 trip, shutdown the reactor. We still have the PORV open 14 and the spray valve open. 15 CHAIRMAN AHEARNE: Yes, but the pressure drop is 16 due primarily to loss through the drain rather than rapid 17 cooling? 18 MR. O'REILLY: Well, the cooling of the plant, here 19 would be primarily from the open valves. 20 CHAIRMAN AHEARNE: So you drop the pressure, 21 primarily to the loss of the fluid--steam through the--22 MR. O'REILLY: Yes, sir. 2 Now, at 14:26:41, this is the point in which --24 CHAIRMAN AHEARNE: One other question, here. Sorry 15

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to keep on asking the questions, but I am trying to get as clear as I can.

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He did not try to -- automatically to drive that 1 PORV shut; he went directly to the block valve? MR. O'REILLY: That is what he did, he isolated it. 5 I do not know whether or not he -- do you happen to know 4 whether or not -- oh, yes, he has no means to control it. That is right, it lifts automatically, and when the pressure 8 comes back within -- following the blowdown it would receed. 9 CHAIRMAN AHEARNE: But the pressure did not get to 10 the trip--11 MR. O'REILLY: The PORV was not controlled by 12 pressure; it was driven open by loss of control power --13 the positive side of the control power. 14 CHAIRMAN AHEARNE: And there was no power then to --15 MR. O'REILLY: To move it. 14 CHAIRMAN AHEARNE: -- to move it. 17 MR. O'REILLY: And that is when the operator had to 18 step in and isolate the PORV. 19 CHAIRMAN AHEARNE: Did the operator, at that stage, 20 that he had lost the X train? 21 MR. O'REILLY: Well, at this stage is when he lost 2 about half of his -- of the instrumentation that would be of 11 value to him and I wil' go into that in regard to monitoring 11 a natural circulation. But, overall in the control room, 11

looking at the total amount of instrumentation, he lost pretty near to 70 to 80 percent of the instrumentation in the control roomf not of all of which is safety related, or you would help him in monitoring reactor, but that occurred at the very first second when he lost all that instrumentation.

Okay. The first alarm that he received was the loss of the X bus, so he knew that this had occurred. Okay. We went through the high pressure---

CHAIRMAN AHEARNE: The high pressure was automatically initiated, that is his own operator.

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MR. O'REILLY: Now, after the high pressure indication and the operator at 14:26:54 shutdown the cooling pumps in accordance with the procedures.

CHAIRMAN AHEARNE: Was that appropriate?

MR. O'REILLY: Yes, sir. He followed--the procedures that he followed which I have us--I have provided you some information on that in the package here. It shows the NRR, lessons learned and reviewed the LOCA procedure and when--and they followed that very well.

The operators were very sensitive to that closure. At 14:31:32, here is where you have the reactor building pressure high. Before we noted that the reactor-had a high alarm in the reactor coolant drain tank, the rupture disc has ruptured and we are having the steam release into containment through the broken rupture disc.

CHAIRMAN AHEARNE: RCDT is?

MR. O'REILLY: Reactor cooling drain tank; quench tank is some of the different names that they use.

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Now, at 14:31:59, the A steam generator boils dry. This was an actuation of the steam break matrix on this generator and this did cause a cutback in feedflow and an eventual feedpump trip. This has to due with the pressure in the generator.

CHAIRMAN AHEARNE: Go through that again. Why does the feedflow cut back? Could you put one of those mics on?

MR. QUICK: Immediately following the trip, the normal automatic action of the ICS is to close the feedwater valves, to allow the steam generator to boil down to the new control point of 30 inches on the start up range. As a result of the failed instrument on the A generator, indicating that the level in the generator was at 50 percent on the operating range, the feedwater valve stayed closed and allowed it to boil dry. This reduced the pressure in the steam generator and actuated the steam reg metrix at 60° pounds pressure in the generator. When that occurred that closed all the feedwater valves, the main steam isolation valve, and the suction valve on the A main feed pump which dealt with that generator.

MR. O'REILLY: I would skip down to 14:32 to 14:44. The operator started the emergency feedwater pumps,

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this was a manual operation. There was no signal to activate these pumps.

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CHAIRMAN AHEARNE: Why did they do it?

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MR. O'REILLY: Because they--to insure they had-they had tripped, you know, the A feedwater pump, this is to provide additional feedwater, insure its availability. And that was a proper and correct maneuver.

At 14:33:30, the reactor coolant pressure reached the maximum and this is a full HPI flow and the pressurizer goes solid. About this time the--perhaps before, it is hard to tell, they actually had one of the code valves lit on the pressurizer.

CHAIRMAN AHEARNE: Before you get to that I had thought that earlier on there was a manual isolation of the containment.

MR. O'REILLY: No, sir, they isolated the letdown system, makeup system, you know, which is a first step that they would take. The actuation of containment--yes, at 14:26:41, when HPI actuates the containment isolated.

MR. STELLO: It is at 14:26.

MR. O'REILLY: Go ahead and address it then.

MR. QUICK: When they received the HPI signal at 14:26:41, part of the LOCA procedure as that point is to ensure that the valve associated with the sump and the RCDT are isolated and if a perge is in progress, you are

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1 instructed to terminate the perge as well and that was the containment isolation that was referred to. These are manual 2 1 actions that were taken by the operator in accordance with these procedures. d. MR. O'REILLY: There was a perge in progress at 1 the time and they did isolate it. á CHAIRMAN AHEARNE: So that the actual affect was 7 to terminate the perge. 1 MR. O'REILLY: Yes, and also to put the sump pumps 7 in full alarm to prevent any possible transfer of fluids from 10 the containment. 11 CHAIRMAN AHEARNE: But as far as what is would 12 be called containment isolation, that was not done. 13 MR. QUICK: No, sir. 14 CHAIRMAN AHEARNE: I had thought that one of the 15 interim procedures was to have someone available to manually 16 isolate the containment. 17 MR. O'REILLY: I believe that is what is being 18 described. 19 MR. STELLO: As a result of the short term license 20 learned and as part of that -- as I understood from what Harold 21 said last time, as part of the basis for the exemption, that 22 was set up and I think it is being described is that the 22 effect did what they were supposed to for that understanding. 24 CHAIRMAN AHEARNE: But that is not full isolation. 15

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t MR. STELLO: No, there is an automatic containment 1 isolation. These are over and above those things which are 1 not part of that system. CHAIRMAN AHEARNE: Did the automatic isolation 1 trigger? 5 MR. STELLO: I think that occurred at 4 pounds. á MR. O'REILLY: Yes, it occurs here; we are coming 1 to it. 8 Let us see, now, we were at --4 CHAIRMAN AHEARNE: We are bottom of Page 204 the 10 reactor coolant reached its maximum --11 MR. O'REILLY: Yes, I said there--the pressurizer 12 is solved and the code safety valve is lifting. Now the 13 code safety valve is supposed to lift at 2500 pounds and this 14 valve lifter early. 2400 rounds, approximately and it has 15 based on the physical evider.ce, the tail pipe monitors, 14 et cetera, that the valve stayed opened and it opened 17 intermittently throughout. So it was -- it did not function 12 properly or it was not set properly originally. And we 19 will have to look at that and , of course, --20 CHAIRMAN AHEARNE: That is as far as where it 21 opened. But from your description, it did not stick open? 22 MR. O'REILLY: It opened up and it staved open, 2 we believe, at a blowdown excessive of its design. It 24 seemed like it stayed open longer than it should. 1

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MR. STELLO: That is because of the lower set point t Jim. 2 MR. O'REILLY: Yes. 1 MR. STELLO: The reason the valve was discharging 4 was because the pumps were supplying about 1,000 GPMs and \$ that obviously had to go somewhere, where it was going á through the safety valve at that point. 7 MR. O'REILLY: Yes, but it would have lifted at 8 2,500 pounds. 9 CHAIRMAN AHEARNE: Vic, do you think its staying 10 open was due to the low set point, rather than some other. 11 MR. STELLO: No. Well, the set point were higher --12 you are pumping in 1,000 GPM pressure as a solid --13 CHAIRMAN AHEARNE: Right. 14 MR. STELLO: So ---15 CHAIRMAN AHEARNE: But in this intermittent 14 operation, Jim said that he thought it stayed open longer 17 than it should have. 12 MR. STELLO: Only because the set point was at 19 2,400--20 CHAIRMAN AHEARNE: That is the reason as far as 21 you could tell. 22 MR. O'REILLY: We are still trying to refine 22 some of these numbers and I am not sure how much --24 MR. STELLO: Let us not leave the impression that 15

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19 PAGE NC. that is very significant in terms to the amount of wate." t being discharged. 1 CHAIRMAN AHEARNE: We have not gotten to that, yet. 1 I was just trying to understand. 4 MR. O'REILLY: We also know that this valve had 1 been weeping, too. You can tell that by looking back at the á traces. 1 At 14:34:23, this is when we had the reactor 8 building zone high radiation alarm and at 14:42--\$ CHAIRMAN AHEARNE: And that reading was --10 MR. O'REILLY: The alarm, we have --11 MR. STELLO: I do not recall that either. 12 MR. O'REILLY: I remember the maximums and 13 everything else, I do not know what the alarm setting. 14 COMMISSIONER BRADFORD: Jim, you say the valve 15 had been leaking before the event? 14 MR. O'REILLY: Yes, it was not particularly 17 unusual for a relief valve or a safety valve. 18 COMMISSIONER BRADFORD: But there is some limit 19 on how much it can be leaking? 20 MR. O'REILLY: Oh, yes, sir. 21 COMMISSIONER BRADFORD: There is some limit on 22 how much it can be leaking? 2 MR. O'REILLY: Oh, yes, sir: yes, sir. 24 COMMISSIONER BRADFORD: Any way of knowing 11

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whether they would have closed it down? t MR. QUICK: It was -- the leak rate had been 2 very good prior to the event. We have a text spec limit of 1 1 GPM unidentified leakage and basically no pressure boundary 4 leakage from the RCS, but their leak rate had been less than 5 a half gallon a minute at all times and this is well within á the text spec limit, yes. 1 - MR. O'REILLY: At 14:44 this is when they restored 8 non-nuclear instrumentation and --9 CHAIRMAN AHEARNE: What action did they take 10 to get it restored? 11 MR. O'REILLY: They had pulled this module, this 12 faulty module, this module that had faulted --13 MR. QUICK: There is an auctioneering circuit, or 14 a power monitor module as it is termed, which once they 15 pull that module they were then able to reset the imput 14 breakers to the power supplies on the X bus and restore 17 power. 18 MR. O'REILLY: You could look at Page B3--19 CHAIRMAN AHEARNE: Was it a replacement of the 20 module? 21 MR. QUICK: No, they just removed the module. 22 CHAIRMAN AHEARNE: So that was not really a fix of 22 something, it was more to reset the breakers? 14 MR. QUICK: Right. 15

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CHAIRMAN AHEARNE: But they did not actually determine here is what causes this, caused the fault.

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MR. QUICK: It was felft originally that this power monitor module may have been the fault on the bus because they could not reset the breakers until they had removed that module. In further checking the module on the bench, they could not fault in it. So it is postulated that whatever the fault was, it cleared itself in some fashion, either by buring completely through to an open condition of whatever.

MR. O'REILLY: At 14:44:31, here is where you have the containment isolation and this sends another signal when you have containment isolation to start the HPI. This is the 4 PSIG pressure that was obtained in the reactor building.

14:52, of course, they had all of their instrumentation, and following their procedures, they had verified various perimeters, they followed HPI and reduced pressure to 2,300 PSIG.

At 14:56:43, they restored feedwater to steam generator A and 15:17 they declared the class B emergency. CHAIRMAN AHEARNE: Now, could you explain what--MR. O'REILLY: Why it seems like now that you are getting it under control and got the power back--

CHAIRMAN AHEARNE: Well, what are the criteria for

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CHAIRMAN AHEARNE: Right.

MR. O'REILLY: That valve discharged water until it was the block valve was closed.

CHAIRMAN AHEARNE: Okay, but that was relative--MR. O'REILLY: It was 14:25:50 then--

CHAIRMAN AHEARNE: That is just 2 minutes.

MR. O'REILLY: That is right. And then once they initiate HPI when they had the low pressure initiation, the pressure came back right up to your 2,400 pounds and it stayed up at that level from, let us see. Somewhere after 14:31 up to 14:52. That is keeping all the pumps operating and this water was being discharged from the code safety valve.

CHAIRMAN AHEARNE: So you are saying between 33 and 52, which is about 20 minutes, you have about 22 minutes --

MR. O'REILLY: Plus the PORV --

CHAIRMAN AHEARNE: --when you lost--when the 43,000 gallons went out.

MR. O'REILLY: Yes, sir.

CHAIRMAN AHEARNE: About 2,000 gallons a minute.
MR. O'REILLY: Yes, sir. That is a little high.
I mean, it seemed to me that it would be a little lower than
at 36 at 4,000, but, do you want to answer that how you

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got up to 43,000?

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| : | MR. QUICK: Well, I think the flow would have been |
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| : | higher than the 1,000 gallons a minute during the time the |
| 1 | pressure was down low, obviously. Plus at 14:52 they had |
| \$ | just throttle pressure and in an attempt to control, probably |
| á | HPI pump, an attempt to control pressure at about 2,300 |
| 7 | pounds. But, I think there was some obviously further |
| 8 | water being discharged from the system. |
| 9 | CHAIRMAN AHEARNE: After 14:52? |
| 10 | MR. QUICK: Yes. |
| 11 | CHAIRMAN AHEARNE: Well, but if the safety valve |
| 12 | was receeded, the block valve was still closed, where is |
| 13 | it coming from? |
| 14 | MR. QUICK: Well, we are not sure that the safety |
| 15 | valve is fully receeded at that point. |
| 14 | MR. O'REILLY: That is a question of the blowdown, |
| | when the valve really ceeded or how tight is ceeded once |
| | it lifted, is one of the questions. |
| 14 | MR. QUICK: We know for example that they have |
| 19 | pumped to this point a total of 35,500 gallons bac. out of |
| 20 | the reactor building and they have 9 foot 5 inch level |
| 21 | indication in the reactor building sump and these two |
| = | would correspond to the total amount that was drawn out of |
| = | the Morey (?) water storage tank during the injection phase. |
| :4 | CHAIRMAN AHEARNE: What would be the loss rate |
| 2 | that you would expect out of the safety valve in this kind |

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of circumstance?

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MR. QUICK: I do not have any idea.

MR. STELLO: The safety valves are sized steam 600--maybe Denny Ross is here, he can help me.

MR. ROSS: Two to Three hundred pounds each.

MR. STELLO: Pounds per hour per steam. So they were pumping water which probably exceed that value. I do not have the exact number with me, someone is basing a rough calculation. But an order magnitude would be something in excess of 300,000 pounds per hour.

CHAIRMAN AHEARNE: Of course, that is --

MR. STELLO: I think I will try to give you a feel for the answer to your question in terms of help me with it. The kind of pumps were on full we were discharging about 1,050 GPMs up to the time of the throttle and at that point they were throttled back to what looks about on the order of 300 GPM until about 15:50. So there was still some period of time where the valve had to be clearly-coming open and closed throughout that period until they got out through 59.

MR. O'REILLY: The next several slides relate to the non-nuclear instrumentation power supplies and some of the key perimeters that were effected by the loss of the X bus. On Page B3 we monitored a simplified an electrical diagram and it does appear that we had these faults downstream of the X where we say up there the X instrument plus

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the fault occurred there. How, as I said earlier, we have not exactly determined it. It is just a direct short on the positive side and only if you fail the positive side, you open up the PORV and the spray valve; if you fail the negative that would not occur.

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CHAIRMAN AHEARNE: And none of the examination of the instrument panels shows any trace of what might have been a burn through?

MR. O'REILLY: That is the intelligence that we have, sir. We are not through, but so far. Now, you can see we have identified the X instrument bus and the Y instrument bus and going back--going back now to Pave B4, I would like to say a few words about the next five pages.

What we have here is a not a listing of all of the instrumentation that was lost, we ourselves selected heat perimeters that would be particularly useful in verifying natural circulation or subcooling and we picked those out. There, of course, were others that were lost and others that were not lost because we did not loose our nuclear instrumentation and control rod positions which, of course, are provided by our reactor protecton system vital power.

On the first page, 105, where you can, and I put in the first two pages I put more of the information of the instrumentation that was lost. And we talk lost, this is the instrumentation that was available to the control

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operator right in front of him. 1 The T Hot, Loop A, Loop A and T Hot, B and B, we 2 lost that and this was, of course, one of the inputs into the ICS system and that would have effected the calculation 4 of T average, which is one of the driving forces for all of \$ this, for the control system. á Pressurize the level, we lost all pressurizer 7 level--8 CHAIRMAN AHEARNE: Why is it that a few of the 4 instruments were available on the computer but not on the 10 control board? 11 MR. O'REILLY: That was when you usually line them 12 up for one you get the other on the computer. That is just 13 the normal arrangement. 14 CHAIRMAN AHEARNE: Well, am I misreading this? 15 I was looking at this and concluding that you are saying, 16 for example, if I look down the list on the second page, all 17 of these were lost in the sense they were no longer available 18 on the control board. Some of that reads as though would 19 be available, had they querried (?) the computer; is that --20 MR. QUICK: That is true. The reason for that is 21 because normally on an analogue signal like this, which is 22 supplied to an indicator on the control board, there will be: 22 a buffer stage that the signal passes through. They have 24 the capability to select one or the other of those instru-25 ment channels to feed through that buffer to the indicator

on the control board.

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CHAIRMAN AHEARNE: You mean X or Y?

MR. QUICK: That is right. However, the buffer--CHAIRMAN AHEARNE: So here you have X is feeding to the control board and in a couple cases, Y is feeding to the computer.

MR. QUICK: Well, the Ys can also be fed to the control board, however, they have to pass through the same buffer that the X channel would pass through if the wide channel were selected to go to the indicator. The buffer itself, would be powered from the X train in this particular case--

CHAIRMAN AHEARNE: So the buffer was lost?

MR. QUICK: Right. So if the buffer is lost, you have lost the indicator; however, upstream on the Y channel the signal is still good and that is where is would be taken off to go to the computer.

CHAIRMAN AHEARNE: Well, does this mean then that could have gotten pressurizer level by going to the computer?

MR. QUICK: In the case of the pressurizer level on that one channel--

MR. O'REILLY: One channel. MR. QUICK: One channel, channel 3. MR. O'REILLY: OP 3. CHAIRMAN AHEARNE: Did they?

MR. O'REILLY: I do not believe that they did.

They did not. The asterisks we put there--these are ones that have a switch were you can select from.

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On Page 2 of 5, I identify, again, the T Cold Loops, that they were, of course, input into the ICS system. On 3 of 5, we had, of course, an indication of pressure from Engineered Safeguard Systems and I would like to identify here that when the operating levels, we did have on the operating level, this is one of the reasons why we generally work better. We did have an intelligence going into the ICS system that provided Level information, that did not on the operating range for the A.

CHAIRMAN AHEARNE: So there is a mixure then. Whereas the full range levels of A and B both come off of Y, the operating levels do not.

MR. QUICK: The operating or the startup levels are both split between X and Y; the full range comes off Y.

CHAIRMAN AHEARNE: In the design, which instruments come off of which train. Is there any deliberate design for redundancy put in?

MR. QUICK: I am reluctant to answer that question, I think that is B&W's scope.

CHAIRMAN AHEARNE: Well, what is the Staff's season judgment?

MR. O'REILLY: Well, the whole subject of the design of the non-nuclear instrumentation is the subject of this meeting today and that is going on and I think,

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obviously more said on that subject. When I go through this list I would like to be sure that everybody understands that the reactor protections information, these are separate channels, completely separate from all of this and that was uneffected by--

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CHAIRMAN AHEARNE: What are the basic instruments in the reactor protection system other than the control rod system?

MR. QUICK: Well, basically you would have things like narrow range pressure, and narrow range temperatures, RC flows, and that is about it, I guess.

> CHAIRMAN AHEARNE: And that is driven off of the--MR. O'REILLY: Vital bus.

CHAIRMAN AHEARNE: Okay.

MR. O'REILLY: Now, I have provided on Page B5. B5 through five pages, excerts from the loss of coolant emergency procedure and as I said earlier, the operators did follow the procedure, they were sensitized to it and appeared to be well-trained.

CHAIRMAN AHEARNE: What is MUT?

MR. O'REILLY: Makeup Tank.

The item that seemed to be of a lot of questions on is on Page 5, if you are concerned.

CHAIRMAN AHEARNE: These are on the first list of syptoms to indicate that there is a problem; there is no direct link to what--what was the low reactor coolant pressure?

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MR. O'REILLY: The lowest? I think it was 1,500 when they had the actuation of the LPI. It went down to about 1,300 pounds. There was five degrees above saturation and although we are not sure it appears that there was at that time, for a very short period of time, some limited boiling--local boiling at that time, five degrees above saturation in the core region.

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CHAIRMAN AHEARNE: Back here in the first section, you had said that the--shutting the reactor coolant pumps was required by the Applicable (?) Emergency procedure and that is that HPI initiation on low reactor coolant pressure?

MR. O'REILLY: Yes. And at 2.4.6.2 on Page 5 when they obviously--when they got the power back, this is when they entered this phase of the procedure. What was the pressure? You asked before about the lowest pressure, the lowest pressure reading it from the chart appears to be about 1350. At the chart from the detailed sequence of events which will be included in our report when we finish it.

CHAIRMAN AHEARNE: Okay, now, 2.4.6.2, is that what triggered cutting them off?

MR. O'REILLY: Yes. When they received their intelligence and evaluated where they were, that is when they secured the HPI system.

CHAIRMAN AHEARNE: Okay. Now, how are they keeping

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| 1 | track of the subcooling? |
| 1 | MR. O'REILLY: They have a meter. |
| 1 | CHAIRMAN AHEARNE: And that was not lost? |
| | MR. O'REILLY: That was not lost. |
| 5 | CHAIRMAN AHEARNE: And they also reached the |
| á | conclusion that they the action was necessary to prevent |
| 7 | pressurizer level from going off scale high? |
| 8 | MR. O'REILLY: The pressurizer was solid. |
| 9 | CHAIRMAN AHEARNE: Just reading these procedures |
| 10 | that |
| 11 | MR. O'REILLY: When you do not have the intelli- |
| 12 | gence, one of the lessons learned is to keep the pumps |
| 13 | running and the running of the pumps and the water dis- |
| 14 | charging would be the normal procedure for |
| | CHAIRMAN AHEARNE: So, it is already gone? |
| 14 | MR. O'REILLY: Beg your pardon? |
| 17 | CHAIRMAN AHEARNE: It is already gone off scale? |
| | MR. O'REILLY: Yes. |
| | CHAIRMAN AHEARNE: So, that is a subset of the |
| 14 | procedure as if the pressurizer level has gone off scale |
| 20 | high, and you have got 50 degrees subcooling? |
| 21 | MR. O'REILLY: Yes, sir. |
| = | MR. QUICK: Well, I think, up to that point the |
| 2 | operator did not know what he had in the pressurizer because |
| 24 | he had no pressurizer level information available to him. |
| 2 | He felt that the safest thing to do was to keep the pumps |
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on at full flow until he has restored his instrumentation and can tell the actual plant status. And once that was done, he made the determinations of subcooling and so forth, in accordance with his procedures and at that time determined it was safe to shut them down.

MR. C'REILLY: Mr. Ross, do you care to say something on the procedure?

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MR. ROSS: Well, I think it has already been covered the mod 24 of their procedure called EP 106 had been prepared and consistent with two features from B&O. One was the ordum (?) structure on termination of HPI and the other part obtained to the high pressure injection that we were subcooling and had this 50 degrees subcooling where we could have had terminated HPI consistent with keeping a pressurizer level went off, and this was consistent with the guidelines that we have approved and they had incorporated the appropriate guideline at the appropriate procedure and apparently they had followed it correctly. The same comment on reactor coolant pump trip absorbed in 7905C which came out last summer, which said that if you reach a low pressure and the ACCS comes on to trip a reactor to a pump, we had letters to the PWR industry, individually by vendors, we have an exhausted series on analyses last fall that columnated in a report, NUREG 0623, two months ago on a subject. Again, Crystal River had in the same procedure, had incorporated

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requirements of the Bulletin, and it was also consistent with the analysis that had already been done, and the operator reaction there, as far as I could tell, was appropriate according to the procedures.

CHAIRMAN AHEARNE: Thank you, Denny.

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So, if the subcooling meter works throughout, how close does it indicate the system cannot do anything except cool?

> MR. O'REILLY: That was five degrees. Can I proceed then, Mr. Chairman? CHAIRMAN AHEARNE: Yes.

MR. O'REILLY: The next slide is the post-TMI two requirements, to show you where the plant stood as of the time of the event. They had, as you can, they have completed the short term lessons learned. They have been authorized referral of two of the short term lessons learned; first, the containment isolation and position--positive position indication of the PORV and the saftey valves.

The fact that they have not completed those and did not, in my view, in view of my staff contribute or add to the event.

CHAIRMAN AHEARNE: Well, let us say that they had the positive indication of the safety valve, would they have done anything different?

MR. O'REILLY: Well, they knew they left it because they had the indication right there. It was just

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like a training insensitivity, that was not the problem. And they would not have shut off the pumps, they would not have done anything any different, until they got the instrumentation back. So, it really did not contribute in our view to the event--they did complete, and there is some examples of items they did complete that could have had a bearing on the event, the subcooling meter, the shift technical advisor, and so forth.

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CHAIRMAN AHEARNE: Well, let us take an example of that. What did they shift technical advisor contribute?

MR. O'REILLY: Well, in the event the operator was in total control, he was very positive, he was quite consistent about having the safety features work, you know, without the curtailment. And what the shift technical advisor did was observe and since nothing went wrong, it is hard to say what he did and I do not know how else to put it, Mr. Chairman.

CHAIRMAN AHFARNE: It sounds like what you are saying is that had he been needed, he was there.

MR. O'REILLY: Yes, sir.

CHAIRMAN AHEARNE: .But, as far as you can tell he was not needed?

MR. O'REILLY: That is correct. But, they did follow the procedures that were outlined, and I guess the shift technical advisor would have to unless the operator made some major mistakes. There were several groups formed,

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you know, right after to evaluate the vent, and the did have the shift technical advisor involved in the incident evaluation.

Some of the Bulletins and Orders --

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COMMISSIONER BRADFORD: Come back a moment to the position indication on the safety valve. Did that not make-the absence of that not make the job of restroing the bubble more difficult. That is, they had a valve that was positioned at which they were uncertain?

MR. O'REILLY: The restoration of the bubble, I do not think this--this was not a factor. The pressure had been reduced down, I think, below 2,300 pounds and the valve had ceeded and the temperatures went down--

COMMISSIONER BRADFORD: Well, by the time they were able to do it. But, wouldn't it, during the time, that the valve was--

MR. O'REILLY: They would not be restoring the bubble, they would not be undertaken--

COMMISSIONER BRADFORD: You are saying they could not have restored the bubble any sooner, anyway?

MR. O'REILLY: That is correct.

CHAIRMAN AHEARNE: Let me--the onsite technical support center, there had been some dispute amongst some members in Bethesda as to what really had proven itself--

MR. O'REILLY: That was one, I think, very first lessons I learned from the event, they are listed on the

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back page of the report, the technical center was, although not equipped yet. It does not have to be fully equipped, I believe, until ./1/81. It was of great help and I talked to the licensee about it also and they although were not actively, they were not enthusiastic about the technical support center, that following this event they were fully supportive of it; it was excellent. That is, of course, my view and the view of my staff.

CHAIRMAN AHEARNE: Okay. When you say postaccident sampling, what specifically--

MR. O'REILLY: They had --

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CHAIRMAN AHEARNE: On those list of completed --

MR. O'REILLY: Of course, did not have high radiation levels like that, they did not have the driving force that we had at Three Mile Island, but they have completed it and they used the station, which they have completed to take the samples of containment atmosphere--

CHAIRMAN AHEARNE: I chough there was some problem using the technique to take the containments out?

MR. O'REILLY: I am not aware of any problems.

MR. STELLO: Well, the last we heard, Jim, and see if you can help it out. We understood using the containment sampler that was installed to meet this, there was some difficulty of--

MR. O'REILLY: That is true. The reason is that they just got it installed and they got the results but they

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comparing them with the samples they took from a different, you know, point in location so the want to go back and take them on the other side. So there was problem there were a lot of people did not put a lot of weight on the first sample and that is just because of confidence in using, you know, familiar equipment in the procedures. It was that type of a problem, only.

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CHAIRMAN AHEARNE: And when improved reactor operations, what does--

MR. O'REILLY: That is that listing of things like administrative duties and control to access to containment, turnover procedures and they had those--

CHAIRMAN AHEARNE: They were completed, but do you have evidence that they were helped or --

MR. O'REILLY: Well in that knowledge of the plant, you know, and the access control, I think that they were a help, but it is hard to put a number on it. It was very controlled, the optic crews had all the proper intelligence and what had been going on in the plant, and I think that would contribute, but it is impossible to measure.

> MR. QUICK: Can I address that? CHAIRMAN AHEARNE: Please.

MR. QUICK: I have been the project inspector on Crystal River for the last two years and I have seen a definite improvement in the awareness of the operators, as a result of some of these things that were instituted,

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such as the shift turnover procedures, and extensive training that was conducted following Three Mile Island. I think some of the accidents that the operators took during this particular event were a direct result of that drain that was provided and the increase in awareness of the plant's status, also, I think, led itself to the conduct of the operators during this event.

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MR. O'REILLY: At this time, this was the last slide I was going to show--

CHAIRMAN AHEARNE: I might just say one word about what you meant about being in Lock Step.

MR. O'REILLY: Yes, I do know what member of my staff put that in there. Lock Step means that there, in this case, it means that they are tied into following the advice of--that begun this group, and were completed in accordance with that and Owners Group progress is monitored by NRC. In other words, they are commited to finish the long term items and that is how they are handling it, with the Owners Group.

CHAIRMAN AHEARNE: The utilities in Lock Step--MR. O'REILLY: Yes, sir. One of the questions-there are two questions asked and I would like to address them in your request--the first two questions, I have a slide on that. This is the--one is the status of the responses to the NRC Bulletin that was sent out on problems with the nuclear instrumentation. First one is that status

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of responses and I will address Crystal River first and that is the bottom one, that the response in getting received on March 10.

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CHAIRMAN AHEARNE: It was due on the 29th?

MR. O'REILLY: It is due--7927 was due 90 days in effect after receipt, and so we do allow a couple of days to receive them.. What has occurred here. although I have not been back in the region to look at it as a failure of this type, I believe, that is considered--the fact that there is a scheduled meeting. Where all other people are coming in to discuss all aspects of this failure, of this event. That a number of the responses probably are being re-evaluated and I think that is why you see this type of delay, I assume.

MR. STELLO: I think a fair thing to say that the meeting that is presently going on right now, in Bethesda with licensing, pretty much overtakes the whole issue in response to this Bulletin, at least a B&W plants.

CHAIRMAN AHEARNE: Well, refresh my memory on what you are hoping to accomplish by that Bulletin or NRR was hoping to accomplish, whoever was the driver in that?

MR. STELLO: Well, hopefully, the first thing was to make sure--to the extent that the procedures were needed to be changed, whatever they were as a result of problems in the electrical system that that would be done. And that there would be a comprehensive reivew of the design

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1 of the plant, and to propose and changes that might look it 1 be wise in terms of what that review indicates to them. MR. O'REILLY: Put on the next slide, please. CHAIRMAN AHEARNE: This I guess is -- that is what 1 I thought. That could be interpreted as saying that they 5 were due--they were required to respond with an explanation -á would they have a problem if they lost one of the buses? 7 MR. STELLO: Yes, and immediately what do you do 8 about it; how do change those procedures? 9 CHAIRMAN AHEARNE: That is right. 10 MR. STELLO: And then review it, your design, 11 and look at what kind of changes there ought to be. 12 CHAIRMAN AHEARNE: Right. Now, if you could 13 look back at the previous slide. 14 MR. STELLO: Go back to the previous slide. 15 MR. O'REILLY: Go back one slide. 14 CHAIRMAN AHEARNE: As I read that, nobody has 17 responded other than Rancho Seco which says, we ain't got 12 no problem. 19 MR. STELLO: That is a fair summary of what we 20 have so. That is why I say, ordinarily, when you now--when 21 you try to follow-up on the Bulletins, would be going back 2 through a process that they could consume a lot of time, I 2 think that that is all behind us; we have summoned each 24 of the owners of the B&W plants to a meeting that is taking 25 place right now.

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CHAIRMAN AHEARNE: It would appear, and I assume 1 that they no longer question that there could be a problem. 2 MR. STELLO: I would not think that they would 1 have basis for questions. 4 CHAIRMAN AHEARNE: They no longer question that 5 it would be important to make some changes. á MR. STELLO: And I am sure that after they leave 7 the meeting today, they will be so sensitized. 8 CHAIRMAN AHEARNE: Fine, and perhaps we can find 9 out what is gointo to be done when as soon as possible. 10 MR. STELLO: After the meeting today. Yes, surely. 11 CHAIRMAN AHEARNE: Yes. 12 MR. STELLO: I guess I have a question in my mind 13 that leaves me to conclude whether we need to call it a 14 licensee's and make sure that we do not get a similar 15 response. 16 CHAIRMAN AHEARNE: We are getting the same 17 fantastic responses from the other, I would think so. 12 COMMISSIONER BRADFORD: Now let me ask that 19 question in another way. If nothing had happened at 20 Crystal River ---21 CHAIRMAN AHEARNE: I would guess based upon the 2 dates of those were sent, that we still would not --22 COMMISSIONER BRADFORD: That had occurred to me --24 CHAIRMAN AHEARNE: I would think that TMI Two 25 would be more characteristic. A YORATIM REPORTS

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COMMISSIONER BRADFORD: I guess that TMI Two--CHAIRMAN AHEARNE: It is understandable.

MR. O'REILLY: Well, I do not think that that is fair. We do follow up on the--

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COMMISSIONER BRADFORD: Without Crystal River, what would have happened against the background like this, or is as John suggests, even worse?

CHAIRMAN AHEARNE: You see, February 26 is when the accident here occurred. That is best that he sent their response of the 3rd, Rancho Seco would receive response on the 3rd, giving the response that they sent in , they may sent it in before the 26th. Aconee, they have not-obviously they did not send it until after the accident. Crystal River clearly had not sent it until after the accident, so there are large number of these plants it looks like that is the accident that is driving them to not respond.

COMMISSIONER BRADFORD: Crystal River probably has not sent it yet.

MR. O'REILLY: Well--

MR. STELLO: Clearly the events of Crystal River will cause people to have, with respect to the information requested in this bulletin a different view than they had before. It will clearly now, I think, try their response differently than if had not occurred. That is obvious. COMMISSIONER BRADFORD: What I am after, though,

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is the problem, perhaps in the Bulletin process without the accident of Crystal River, it does not look as though much would have happened here and I am wondering if that is typical of the response you get on a large number of bulletins and if so, is there a way of typing it up?

MR. O'REILLY: I do not think we--there has been a lot work on 7927. Is not information provided on some of the plants? As a matter of fact, a large number of the things that were sent in to help evaluate the answers we got from the Bulletin--work has be done, we have a lot of information on that and a lot of information from Crystal River on all the nuclear instrumentation, what is powered by what. This has been sent to Washington--

CHAIRMAN AHEARNE: But, realistically, it would not take much effort to analyze those responses.

MR. O'REILLY: No, sir. But I think the reason that they are late is because of the meeting today and the relook because of the event. That is why it looks so bad. It is not typcial response.

MR. STELLO: There is really one response--if I am right, there is only one response actually received.

CHAIRMAN AHEARNE: That is right.

MR. STELLO: And that is Rancho Seco.

CHAIRMAN AHEARNE: Right. And that says, no

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MR. STELLO: And that just says that they do not

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have a problem and that there are no changes in the administrative control. I think that both they and we will be obviously looking at it, and I think clearly Crystal River is going to change their view.

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CHAIRMAN AHEARNE: Then you will then cycle off the rest of them.

MR. STELLO: Well, I think that needs to be raised is these are just the B&W--

CHAIRMAN AHEARNE: That is right.

MR. STELLO: --how about the others that the response is going to be similar. I think--I guess I ought to make an obversation. We clearly are asking licensees to do a great deal and this Bulletin will require a great deal of work and maybe we are being a little bit unreasonable with some of the times that we are allowing to do some of the work, which produces a result that is not what we would like it to be too. I think what I would like to do, go back and take a look at whether or not that is infact the case. That what we are asking for is just a reasonable terms of getting the kind of response that we would like to have in a short term, but we ought to really sit down and make sure that is not the case and I think we would want to do that too.

CHAIRMAN AHEARNE: Sure. Of course, in principle, we should do that before we send out a Bulletin.

MR. STELLO: The industry has set up a group now

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that we will have an opportunity before we do something like sending out another bulletin is to sit down with them any try to get some assessment of what kind of an impact it is going to take to get the information. So they have responded in terms of setting up a system where we can go back to get that information, that would be quite meaningful.

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CHAIRMAN AHEARNE: We were working down to the Chilk (?).

MR. O'REILLY: No, I was just going to address that at that time. The first two items--

MR. STELLO: Those were the first two items in the Chilk Gram (?); we have addressed the other item in terms of the instructions that were provided.

MR.: O'REILLY: No. 3 we provided--we discussed that already in the presentation and I was going to respond to our staff's views a little later on.

CHAIRMAN AHEARNE: Okay, fair enough.

MR. O'REILLY: Okay. The next slide is--we get off the actual reactor, the more technical part of the briefing, and this now will relate, primarily, to emergency planning. The first slide gives you a view of our emergency planning inspection activities. These are only emergency planning inspections, that were placed at Crystal River during the last year. We basically have found no significant problems at Crystal River, and as you can see from the regulatory requirements. And the next

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slide, C2, this is what you asked me earlier about, this is an excert from the Crystal emergency plan and Crystal River declared a site B emergency, I think it was 15:17 and it apprears that that classification was appropriate and they did follow through well with the actions that the plan described.

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MR. STELLO: Okay, Jim, let us make clear. This is the emergency plan that is now in the control room, not the revised--

MR. O'REILLY: That is correct. This is the operative emergency plan.

CHAIRMAN AHEARNE: Okay, now the went through-the class A trigger--

MR. O'REILLY: They skipped class A; they went to class E.

CHAIRMAN AHEARNE: Well, let us see. They clearly called us from the State of Florida at some earlier stage--

MR. O'REILLY: One of the problems that we had was there was a notification issue at Crystal. Their procedure calls for them notifying the Florida alert point and with this radios now wask (?) which automatically would inform the county, also. They did call by telephone and that introduced a little delay--

CHAIRMAN AHEARNE: Say that again.

MR. O'REILLY: The called the Florida contact point properly, but they called by telephone. Their normal

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was to call by this Now Wask (?), this radio system and if they did it that way, they would have informed the county a little earlier. The county was informed later, so that they were a little out of sequence in the beginning; it is not a major point, I just mentioned that. Other than that they followed the procedure very well.

CHAIRMAN AHEARNE: Well, but if they then in the class B actions that assume that picks--they did not go through class A, however followed the actions that are listed in class A--

MR. O'REILLY: Yes.

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CHAIRMAN AHEARNE: -- why did not the use the radio?

MR. O'REILLY: Well--

MR. STELLO: Wait a minute; there seems to be some confusion. The next slide also says for class B, they must notify the State--

MR. O'REILLY: Oh, I see; I am sorry.

CHAIRMAN AHEARNE: Yes, yes, okay.

MR. O'REILLY: So they did follow through on their plan very well with that little point which I consider to be--

CHAIRMAN AHEARNE: Why did not they use the radio

MR. O'REILLY: The noise level of the alarm--the noise level in the control room and the number of people.

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They went downstairs and called the State and explained the situation to the State, rather than use the radio. CHAIRMAN AHEARNE: You are saying that they cannot use the radio when they have an emergency on site? MR. O'REILLY: Yes, sir.

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CHAIRMAN AHEARNE: It works fine with the drill and without with the emergency.

MR. O'REILLY: They want to be sure--at that time they felt competent of the fact that they had no releases and he wanted to sit down and talk to them and so they deviated from their plan in that regard.

COMMISSIONER BRADFORD: Does it make sense to think of relocating the radio?

MR. O'REILLY: Perhaps, it depends what they put in the technical supports. A lot more thought is being given by the Florida Corporation of what equipment they put in the technical support center and which is one of our comments which we thought was an excellent idea, good concept.

CHAIRMAN AHEARNE: And if I understand correctly, their procedures do not have them explicitedly being required to notify the local authorities?

MR. O'REILLY: The way it is, Florida has an improved plan is to notify the State and the State does this type of notification. For the process of notifying the State, they also would notify them by radio, the county

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disaster control. 1 CHAIRMAN AHEARNE: Now is that because the county 2 monitors these? 1 MR. O'REILLY: Yes, sir. But the State had then 4 had to call back later and inform the county because there 1 was some delay in it. á COMMISSIONER BRADFORD: Is that step in the State 7 of Florida emergency plan or is that just for the general 8 industry? 9 MR. O'REILLY: No, that is, as I understand it, 10 that is the way the State of Florida runs it. You inform 11 the State, and the State does these types of notifications. 12 CHAIRMAN AHEARNE: Now, was it the LOCA that 13 was the trigger for the class B action? 14 MR. O'REILLY: Yes, sir. 15 CHAIRMAN AHEARNE: And is there an explicit 14 definition is this plan of what a LOCA is or is it a 17 valve stuck open or that fluid balance indicating that you 18 have lost a certain amount of fluid --19 MR. QUICK: I am not familiar with the exact 20 wording in the plan, but the plan does specify what 11 constitutes the requirements for reporting on a LOCA. 2 CHAIRMAN AHEARNE: They actually call that at 2 15:17, which is, as you have pointed out, close to an hour 21 after the accident had started and after they had followed 1 by reduced the pressure, restored the feedwater, and after

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they had done all that about 20 minutes later they declared the emergency?

MR. O'REILLY: Well, yes. But, before that, infact, I think it might be time to go into the sequence of events that I prepared just on the emergency response. Would that be all right?

CHAIRMAN AHEARNE: Sure.

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MR. O'REILLY: This is on C3. I thought it would make a less busy chart if I pulled some of these, but put a few in there to give you an orientation and I guess you have 14:45, of course, you have your reactor building dome monitor. Oh, no, 14:45, I said 14:45 when we had the reactor building isolation. You can see that they are already getting set up for implementing their emergency plant. This emergency quarter position assumed is the FUC emergency coordinator. And the radiation survery, in the plant, begins the survey at 14:45. 14:50 to 15:05 is when they were discussing the actions regard to the emergency and they actually activated the emergency organization at 15:01 and at 15:70 they made the evacuation annoucement and that is the time we picked up. So there was obviously activity, in trying to get things going in the area emergency planning which seems to be reasonable discussing with our inspectors who were at the site and we did have quite a number of people at the site when the event occurred and our PAT team down there, five or six men; we had

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1 operating licensing people in the control room and we had two residents. 2 CHAIRMAN AHEARNE: Now, Vic, you were informed 1 about 2:45; is that right? 1 MR. STELLO: No. I was informed at 55. 2 CHAIRMAN AHEARNE: Yes. The NRC was informed á at 2:45. 7 MR. O'REILLY: They were informed simultaneously 3 by the plant and by region 2. 9 MR. STELLO: And I believe I activated just shortly 10 past 3:00--11 CHAIRMAN AHEARNE: 15:04. Well, the chronology 12 that, at least, we had build up here at us be notified 13 of the class B at 15:30. 14 MR. O'REILLY: At--they called the State at 15:20, 15 20:15:30 and at 15:30 region two activated the response team lé and ordered them down there. 16:00 the licensing--17 CHAIRMAN AHEARNE: What do you mean by the 18 headquarters upgrades the level? 19 MR. O'REILLY: The only levels you have --20 MR. STELLO: Where are you, Jim? :1 MR. O'REILLY: Vic, you are on --22 CHAIRMAN AHEARNE: 15:30, this is page--22 MR. O'REILLY: At the middle of the page. 24 CHAIRMAN AHEARNE: 15:30, NRC upgrades level. 25 MR. STELLO: We activated the operation center and ATIONAL VERATIN REPORTED

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1 had it activated and we never changed? MR. O'REILLY: I have no answer to that one. 2 MR. STELLO: Well, we never changed it; we 1 activated ---4 CHAIRMAN AHEARNE: Is that when you were asked 1 to leave? á MR. O'REILLY: That is about right. 7 MR. STELLO: No, Mr. O'Reilly was asked to leave 8 very shortly past 3:00. 4 MR. O'REILLY: They have -- this was written up 10 by--we have a breakdown i. the region of different levels 11 and we did upgrade it and I just think it is just a carry 12 over or a typing error. 13 Okay. 16:00 the licensing directs plant's 14 security to set control at site access road; this was done. 15 And it was very effective and --14 CHAIRMAN AHEARNE: Effective in what sence? 17 MR. O'REILLY: That we had a security inspector, 18 also down at Crystal when the event occured. He observed 19 security people going through and setting up the road 20 blocks, he thought it was done quickly. During the 21 event, he felt that the security did all the proper checks, 22 they were very helpful in getting the NRC vans and people 2 into the site and providing--arranginging for escorts 24 to help us; the security worked very well. 25 CHAIRMAN AHEARNE: Now, if I read this on Page C,

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on the first page, I guess they are all C3. Page 2 of 6, 15:17 was that when the non-essential people were told to evacuate Crystal Three? MR. O'REILLY: Yes. CHAIRMAN AHEARNE: Okay, just tracking with our previous chronology, we thought it was 15:48. MR. STELLO: 15:17 was not an accurate time. CHAIRMAN AHEARNE: Could this half an hour difference be important? MR. STELLO: Well, we have to be careful--I think we need to makre sure that note the differences here, and there are some. CHAIRMAN AHEARNE: Yes. MR. STELLO: I thought in terms of the sequence of events which are clearly preliminary as to those times are the times recorded something documented in headquarters rather than the actual identification of the time on site. I would assume that these are all --CHAIRMAN AHEARNE: Oh, I assume--yes, I assumed that Jim's statement is correct and I am just pointing out that we may have been falling as much as a half hour behind of what was happening. MR. O'REILLY. On the next page on 4 of 6, item at 18:45, that is a mistake and I am not exactly sure what time the state lab arrived, I think it was about 20:30, but the State lab did arrive at the site and I think it was

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PAGE NG ____ around 20:30. The R2 mobile laboratory did arrive at 19:00 1 and they were set up to sample around 20:30, 20:45. 2 Now, I did not say here when our site team arrived 1 on site ---4 CHAIRMAN AHEARNE: What time did you actually \$ get there, Jim? á MR. O'REILLY: I got there about 9:00, 21:00. 7 CHAIRMAN AHEARNE: Okay, so where it says region â two directors ---9 MR. O'REILLY: That is an error; I just crossed 10 that off. That ---11 CHAIRMAN AHEARNE: Well, that BMT was not closed 12 down--13 MR. O'REILLY: No, I think that that was just 14 a transposition when they retyped it. 15 CHAIRMAN AHEARNE: Oh, I see. 14 MR. O'REILLY: And at 21:00, that is the time 17 that I did arrive, the first team arrived at 18:00. 18 At 21:07, that is the key time when the reactor 19 coolant pump cool down began and when--in most respects 20 there was very good control and knowledge of what transpired 21 CHAIRMAN AHEARNE: When you say began recovery 22 operations under NRC direction, that is at 21:07. = MR. O'REILLY: Now, I would like to delete that. 14 That was marked off in my copy over here. It was not under 25 our direction; it was under our observation. Once they TICHAL / THEATIN REPORTERS

started the cool down, and I was on the site, we did look, 1 obviously, through everything that transpired, and then we 2 went and did provide specific plant status information to various people, including Governor Graham of Florida, and 4 the various natives of the local communities, seemed 2 appreciative of getting that last status and -á CHAIRMAN AHEARNE: Another minor question, Jim. 1 You have 21:00 as the time you arrived. 8 MR. O'REIJTY: Yes, sir, that is about the time 4 I arrived, I did not-10 MR. STELLO: 21:00. 11 MR. O'REILLY: About 21:00. 12 CHAIRMAN AHEARNE: I guess this should have 13 really 22:20. 14 MR. O'REILLY: Okay. Skipping--any questions 15 on the sequence of events? The next slide --14 CHAIRMAN AHEARNE: You are still going to get into 17 the data transfer? 12 MR. O'REILLY: Yes, sir. I was going to do that 19 at the end. The next several pages relate to the fact that 20 we did take a lot of independent measurements, we identify 21 what types of samples we took, we took them from the plant, we took environmental samples, they will be on Page 2 of 3. 22 And also we worked with teh State of Florida Mobile Lab 24 that arrived that evening and we also identified here that 11 no radioactivity levels above normal background levels were

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observed and the enviroment there was no levels above normal types of discharges were, occurred. EPA arrived at the site and they are taking additional low level measurements and I understand that they intend to stay there until they complete the containment. perge. The next slide is just an organizational chart of what we used while we were at the site. We had a maximum

of 25 people at the site. The last slide--

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CHAIRMAN AHEARNE: You say most of those people are out of region two?

> MR. O'REILLY: Most were, yes, sir. There were people from the PAT team which were from region two there and operator licensing, they were examining--there examining people in the control room when the event occurred.

> > CHAIRMAN AHEARNE: In addition to PAT?

MR. O'REILLY: That is correct. PAT team was just conducting a--

CHAIRMAN AHEARNE: So there were NRR licensing operators?

MR. STELLO: Joe Buzy was there. MR. O'REILLY: He was in the control room. Now, on Page D1 these are the lessons learned from the--

CHAIRMAN AHEAR^{ME}: And because he was from NRR, is that why he is a technical advisor?

MR. O'REILLY: It is better to call him that, I guess. The primary lessons that were learned from the even: that relate to the emergercy operation, I would like to go through those.

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The technical support center is a key element in accident support. I--we have never had one before, at least I have not been involved in one responding to one in any size shape or form to an event and it was--I visualized that when it is fully manned with the proper equipment, it would be a great aide to NRC and to licensing. If you wish the licensee, shares.

The second item that the communications between the tecnhical support center and the control room must be expanded, I mean I believe that when the technical support center is fully equipped, that problem will probably go away, but the interim situation is this is not as good as this could be.

CHAIRMAN AHEARNE: Now, do you think that we ought to accelerate the data to which we try to establish that?

MR. O'REILLY: Well, all facilities have one now and I think that that schedule seems reasonable, this is not an equipment design and relocation, it seems to do this on a plan basis and incorporate it into their procedures and plans would be appropriate.

CHAIRMAN AHEARNE: Well, what I am, I guess, is questioning is the way you got this worded is it must be expanded. Now does that expanded--

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MR. O'REILLY: Physically. Their room was a little too small.

CHAIRMAN AHEARNE: How about the communication--MR. O'REILLY: The communication

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CHAIRMAN AHEARNE: --room. Does the communications have to be expanded, is that beyond what are scheduled to be put in or beyond what is currently in which less than what is scheduled?

MR. O'REILLY: Well, I do not understand, yet, exactly what type of communications would be acceptable between the technical supports and I am not apt to look at that. It certainly would have to be more than what we had at Florida Power Incorporated at Crystal River.

Also the focus of the NRC headquarters communications, where that is aimed at, it seems to me that it should be aimed at the technical support center.

COMMISSIONER BRADFORD: In that context, just because I do not see it anywhere else, I would have thought among the lessons learned that there is something focusing on avoiding the A team PSID--

> CHAIRMAN AHEARNE: He is getting to that. COMMISSIONER BRADFORD: When, where, how? MR. O'REILLY: I was going to bring it up at the

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MR. STELLO: Why do not you bring it up right now?

MR. O'REILLY: Oh, I will answer it right now.

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We interviewed on the site, the person who was relating information to headquarters and he restates and it has been checked with headquarters, and I think that is correct, that he reported it at 18 pounds. And the meter used at Crystal River is an absolute pressure and that is what the meter read. And some meters in some plants are in PSIG and some are listed in PSIA and I think that is the source of the 18 pounds--

CHAIRMAN AHEARNE: Well, let me see if I cannot track that. The person at the other end who was reporting it was an NRC employer of licensee?

MR. O'REILLY: It was an NRC employee who reported back to headquarters.

COMMISSIONER BRADFORD: Did anyone at the site ever believe that they had an 18 PSIG reading from the day? MR. O'REILLY: I believe the answer is no.

CHAIRMAN AHEARNE: . The person who reported that back though, it must have been very early in the reporting system.

MR. O'REILLY: Yes, it was one of our inspectors who was asked a question and responded with that figure and he--

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CHAIRMAN AHEARNE: Okay, now--

MR. O'REILLY: What did he think is a--when I asked him he indicated in his notes he just calls it pounds and he does know it is an absolute--

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CHAIRMAN AHEARNE: Was this--that was called into the response center, was a tape running at the time?

MR. STELLO: Yes.

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CHAIRMAN AHEARNE: What does the tape say?

MR. STELLO: Oh, I--why do not you get up here and say what it is that you learned from looking at it. <u>MR. MOSELY:</u> Tapes, that I did not listen to them, as I understand it, did use PSIG or A, just said pounds or PSI. The log entries did indicate several times, PSIG in log entries.

CHAIRMAN AHEARNE: In log entry and being made by our persons?

MR. O'REILLY: Yes, by our people. In the response center, in their logs it does say PSIG.

CHAIRMAN AHEARNE: Was there any--did the person at our end ask any question is A of G?

MR. O'REILLY: That occurred later when trying to finally get it clarified --

CHAIRMAN AHEARNE: Well, then in that initial conversation?

MR. STELLO: No. Apparently, whenever a check was being made as to whether it was PSIGor A they went in

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and that request never got back to the plant. It was by looking at the information that was already part of the record that we had and it was not until some time after 4:00 or finally someone went back to the plant and asked the plant again to try to reconcile it and then it became clear that it was PSIA.

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COMMISSIONER BRADFORD: The other day you indicated that you attempted to verify it a couple times yourself. Is what you are saying is that the process of verification went back as far as the logs and then came back to you?

MR. STELLO: I asked someone to check and apparently when they went to check what they did is look at the logs and the data that was there rather than reconfirming or asking--bringing up the question with the people back at the site. That as I understand it, did not occur until about 4:00 and then it was resolved.

CHAIRMAN AHEARNE: Did our person at this end, do you know why the put down G?

MR. MOSELY: Well, Mr. Chairman, my personal experience I have never seen the plants that I have been at anything but a gauge, recorded in anything but a guage.

I personally was of the opinion that that is what we were getting, even though we had not been so busy.

CHAIRMAN AHEARNE: But you say that there are plans for region A? And some other read in G.

MR. STELLO: Yes, yes.

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If I could fault in one place where I think there needs to be an improvement, there is an understanding that when something is to be checked, it has to made clear, check means call up the plant and reverifiy information yo have rather than just check was your reasonable check is going, look at the records--

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CHAIRMAN AHEARNE: Well, there is another thing also, Vic, and I have not got that much experience obviously in nuclear power plants but at least in the Military operations side, I am familiar with one thing that you, in taking messages, you only write down what the message is. You do not interpret it. If you are keeping a log of what someone is telling you, you only put down what the person is telling you, nothing else; no more, no less. You can then go on and interpret it, but as far as the transcription of what is being transmitted--

MR. STELLO: A nuclear data length would really help tremensely.

COMMISSIONER BRADFORD: Well, I have mentioned here just because it seems there ought to be a lesson learned from that particular.item, it sounds as though there may be three. That is the one John just suggested. I suppose that anytime a message from a reactor that includes one really startling piece of information, you might want to clarify righ away that that was exactly what it seemed to be.

ATOMATICAL VOSATIA REMATINE INC.

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MR. STELLO: That is what I am --

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CHAIRMAN AHEARNE: Yes. I was there with Vic.

COMMISSIONER BRADFORD: No. I understand that, but obviously that process should include a call back to the site.

MR. STELLO: Right. I think that that is clearly lesson learned. The fact that it seems to be the most significant one is the one that someone ought to say, call up and recheck that information back at the plant. I think that that ought to be a clear instruction. I think there is another equally important lesson learned. The people who were recording information in log books should record what they have been told, not what they believe; I think that is an important lesson, too. And I think--

C`MMISSIONER BRADFORD: Yes, those were two of the three and the third may well be that--

> MR. STELLO: Well, I could not agree more. CHAIRMAN AHEARNE: As long as it is not--

MR. STELLO: The containment pressure--would we have had the correct reading to containment pressure if we had data length?

MR. O'REILLY: Yes.

CHAIRMAN AHEARNE: As long as it is not powered off of what is left.

MR. STELLO: That is a class 1E.

MR. O'REILLY: The next item relates specifically

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to Crystal, but the offsite technical supports end of it is very small, and it would not be adequate if there were, you know, a larger or more sustainable event.

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The next item, the NRC headquarters response must control questions and imply orders and be sensitive impact on plant personnel during this state if it was an accident.

CHAIRMAN AHEARNE: Could you expand on that? MR. O'REILLY: That is why I would like to address that with the question of Mr. Chilk (?). It is question Number, I guess, four, I guess.

The plant when going through an event like this, They are, of course, very active. There is obviously a real need from headquarters and I think that for information, and I guess for the time being before you get some additional or some capability there, the only source of information is right into the control room event. And talk intelligently to headquarters, which has so much-could affect so many things in an initial response, they have to put some key people on that. And I think that-more than think, I think I feel very strong on the issue as does my staff that the types of questions that come down, the number, and not just in the beginning, the repetitiveness they have to be very carefully creeened and I, although, I think their comments probably still would appply even after any corrective actions are even taken. It is a common--I

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always like communications. You always have to work on it 1 to make it better. Be sure of what you are asking for 1 is important enough to interfere with a staff that I know 1 has unique things to do in the plant; key staff members. 4 CHAIRMAN AHEARNE: Now does that comment pertain 5 not only to the case where these is not an NRC employ at the á other end of the line? 7 MR. O'REILLY: Yes, sir. 8 CHAIRMAN AHEARNE: And also to that case? 4 MR. O'REILLY: They must get all the information 10 they can get. They either leave the station and find it --11 I think that they could interfere if it is too much of it. 12 Obviously you have to have some. In this case here, from 13 what I could tell because I was not a number of other 14 events, but I have been in Washington when a couple of these 15 events occurred, and I understand that this drill, this lá exercise, ran considerably better in this regard than the 17 others, but I still do think that there is room for 18 improvement. 19 MR. STELLO: Jim, I got to ask you a question 20 that I gave to myself. 21 MR. O'REILLY: Yes. MR. STELLO: We had what, about 70 people down 2 there originally? 24 MR. O'REILLY: That is correct. 11 MR. STELLO: And the information that we were aster

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asking, did they have to go to the plant staff to get it or did they get it themselves? MR. QUICK: Can I answer that question? CHAIRMAN AHEARNE: You were one of the people? MR. QUICK: No. I was on the initial response and I arrived on site around 6:00. When I walked into the control room at 6:00 there were a total of seven inspectors in the control room; a total of 17 people immediately in front of the control board, itself, inside the red line barrier, which Florida power has painted on the floor. CHAIRMAN AHEARNE: It seems that that was one of the requirements --MR. STELLO: Well, that is the reason we have the onsite technical support center is to not to have that too many people in the control room. MR. QUICK: One of the problems here with acquiring information from the control directly, is that number one in the majority of cases, the NRC inspectors that go to the site, on a specific inspection, are not

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thoroughly familiar with the control board layout, the location of particular instruments, or whatever. And he--CHAIRMAN AHEARNE: Certainly the resident

inspector--

MR. STELLO: The resident would.

MR. QUICK: The resident inspector would be, yes, sir. I would be, for example, if I was there. But the

> ANTERNATIONAL VERSATIN REPORTERS INC AN SOUTH CLANTCH STREET, L 4. SUITE IN MARMINISTON L S. SHE

average inspector that goes on special--this type of inspection is not, and he has to prevail upon the licensee personnel to point that information to it. And some of the questions that are asked takes direct communication with the operators that are performing the task at the time because they were the ones that took the action that you are interested in. So I think those things--it is very important that those types of questions be straightened out.

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CHAIRMAN AHEARNE: You talk about 17 people, that included our seven?

MR. QUICK: That included both Florida Power and NRC people.

CHAIRMAN AHEARNE: 17 people was the total number in the room or 17 in front of the control board?

MR. QUICK: No, there was 17 in front of the control board. One of my first actions when I arrived there was to clear out all but two of the NRC inspectors and move them to the text support center.

MR. O'REILLY: Talking about communications, too. The hotline, of course, that was invaluable. The communications --normal telephone communications into the plant were completely inundated with calls. So having that was great, however there were several--I will tell you, the hotline did not work perfectly all the time, and I think we have to pay some more attention to that problem.

CHAIRMAN AHEARNE: By not working perfectly, you

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MR. O'REILLY: Yes, I think that we have to pay more attention to that.

How they ring, you cannot just sit and hold them all the time. There were some loss of phones, incidentally, I do not know what time it occurred. When I was there we lost the control room phone for , I guess, for 15 to 20 minutes, that was later on in the evening. And the cause of that loss, I still am not determined.

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MR. MOSELY: There were several occasions where the markers were not able to hear each other and so we broke the communication and had it re-established. And it worked. We would break it if we could not get it back on redial and we would hear, and on a couple of occasions we did that. We also had the telephone company trouble shooting it, you know, as we went along.

CHAIRMAN AHEARNE: Do you know whether that is a problem at any of the other ones?

MR. MOSELY: I do not know at this point.

MR. QUICK: If I might add something to that. I can recall two instances when I was on the red phone in particular where outside individuals, one from Chicago, as a matter of fact, and one from Atlanta, somehow managed to get in on that conference line. They were asking questions about the occurrence that had happened at Crystal River.

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MR. O'REILLY: That is one of the things that I am aware of and I was aware of at the time, but since we are getting write-ups and feedback from my staff to see what occurred, you know, how we can improve things, that is one of the areas that I have to look into.

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MR. STELLO: We told the telephone company that we are not very satisfied with what we have and they are design ng in the future a whole new console which ought to eliminate these problems.

MR. O'REILLY: Another issue is that, although, I think it was less than the previous occasions based on, you know information and comments I hear that a lot of good people are trying to do a lot good things simultaneously are going to appear with some things and to have a little better discipline of who notifies and who informs and who ties up what line as an effect of these are the things that we have to pay a little more attention to.

CHAIRMAN AHEARNE: Now, there were these seven people on site until you got there, who was in charge of our people? Was that clear?

MR. O'REILLY: The person who was in charge originally was our senior resident.

CHAIRMAN AHEARNE: Was it clear to all the members there--

MR. O'REILLY: Yes, but he was relieved by the senior member of our PAT team, until our site team arrived.

ATTEND TIONAL VERATIN REPORTES INC. AT SOUTH CANTOL STREET, L V. SUITE OF VARIANTICAL 2 2000 And that seemed appropriate, and I did not make that decision, but I supported it.

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MR. STELLO: It was a conscious, though, Jim, I was never aware that we had cleared all of us. Who was in charge of onsite all the time. Did they think it was clear to them?

MR. O'REILLY: I talked to the person who assumed control and he said it was clear. Now, whether or not he talked to everybody or not, that is hard to determine. Do you have any comment?

MR. QUICK: I do not know if he talked to everyone on site, at the time or not. I do know that from region two we specified that the senior member of the PAT team take control.

MR. O'REILLY: And that is the man that I am talking about; he did and I think that that was a wise choice in this particular case.

CHAIRMAN AHEARNE: Now by taking control, does-is it then clear that that person is then the spokesman? MR. O'REILLY: He is the onsite spokesman, he is not the person--headquarters is supposed, of course, the--

CHAIRMAN AHEARNE: Okay, then let us get to the issue of who agreed to take emergency on it?

MR. STELLO: Lifting of the class B alert, that was done apparently by some member of the NRC onsite. That was done by PAT team leader and--

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CHAIRMAN AHEARNE: Was there any thought to let us know that?

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MR. O'REILLY: I do not know the answer to that question, I was enroute and I can find out and I understand that he did this and I understand that he concurred , is that not the--in their action, the did not tell them to lift it.

CHAIRMAN AHEARNE: No. But when he concurred that, then the NRC became concurred and I guess it would have been appropriate, at least to let us know that we had done that.

MR. STELLO: Well, let me stronger that that. I think while the ENT was present, that the decision process should have been through ENT and any decisions that should have been made, should have been made through ENT until such time as there was a formal transfer in the authority.

CHAIRMAN AHEARNE: There are types of actions which are as in emergency is increasing, where the senior person in a Loop may have to take the action immediately, and I agree with that. But, when the accident is decreasing when they are coming back off, then you do not have that great sense of time urgency, any appropriate thing would have been for him to contact ENT and after the stage when you got there and it had been turned over to you, then clearly you could make that decision. But up until that time, you really did not have that authority and whatever system

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we have to make clear to NRC people on the site: A, who is 1 in charge, and B, how far does that responsibility goes. 2 MR. O'REILLY: I think that is my comments there 1 on communications. 4 On the last item I have is that NRC headquarters 2 following the transfer, must clear the state with the á site team ---7 CHAIRMAN AHEARNE: Now, you are saying that we 8 did not? 4 MR. O'REILLY: I could start to tell because there 10 were a lot of articles -- from when it was done. I mean 11 people called, talked to me and we agreed or discussed 12 certain items, but it seemed that some of the Press picked 13 up other comments that I do not know how they came about, 14 maybe it was just an exaggeration or minimization, I do not 15 know but I think it would have helped if they were--there 16 were some cases like that to prevent that from happening. 17 At least in a lot of the papers there were comments that 18 were different and it was hard to understand how that could 19 occur. I think it adds to the sense of anxiety to the people, 20 when we are saying different things or confusion, which 11 really did not occur. 2

MR. STELLO: Let me however make clear that in the announcements that were issued from Washington, were in fact cleared with Jim before they were issued. There was nothing issued, any formal statements. I think Jim has

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gone beyond this with the information that inevitably comes 1 out through all the various sources. It would be nice it 2 if somehow would not happen, but I think realistically, there 1 is no way to prevent it and I do not think any attempt of 1 doing it is --\$ CHAIRMAN AHEARNE: Nevertheless, following that á attention to it is a problem. 7 MR. O'REILLY: I believe that covers the item. 8 The only item left, I think, is in the paper --9 CHAIRMAN AHEARNE: Yes, and those are the long 10 term. 11 MR. STELLO: Well, the question of making sure 12 that aside from when the ENT is activated and a regional 13 inspector is dispatched, who it is is to be considered 14 to have the baton on site, is the NRC spokesman, who has 15 to recognize it clearly. Set out some instructions to all 14 hands as I indicated there would to make clear that there 17 needs to be someone who quote in charge, and it is just 18 as we described before. The resident inspector, or if there 19 is a senior person from the region and regional made the site 20 that that is the appropriate individual, make it clear 21 all the time. When the ENT is activated, of course, and 2 the regional director is sent down, then I think we have 22 that clear, so we filled in the gap that was apparently a 24 problem.

MR. O'REILLY: Good.

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MR. STELLO: Let me conclude--are you finished? MR. O'REILLY: Yes.

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| : | MR. STELLO: What all of this means in terms of |
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| 4 | his generic implication, what more needs to go on is |
| \$ | obviously beyond what we can discuss today since there is |
| á | a meeting with all of the owners of the operating B&W plants |
| 7 | going on in Washington, I am sure that meeting will go |
| 8 | on for the better part of the day and it will only be after |
| 9 | that meeting when those kinds of questions can be answered, |
| 10 | I am sure that the Commission followingwe keep the |
| 11 | Commission closely informed of everything we do. |
| 12 | CHAIRMAN AHEARNE: Would you try to get some kind |
| 13 | of a couple page summary down by tomorrow afternoon of the |
| 14 | MR. STELLO: Of the meeting? |
| 15 | CHAIRMAN AHEARNE: Of the significant points of |
| 14 | the meeting? |
| 17 | MR. STELLO: I will be happy to make sure that |
| 1. | Mr. Case isyes. |
| | CHAIRMAN AHEARNE: Fine. Do you have any |
| 19 | questions? |
| 20 | COMMISSIONER BRADFORD: No. |
| 21 | CHAIRMAN AHEARNE: Jim, thank you very much. Vic, |
| = | thank you. You were very complete and an excellent and |
| = | informative. |
| 24 | (Whereupon the meeting was |
| 2 | adjourned at 11:55 a.m.) |

ATTENDE TONEL TOLETTE ADDRESS INC INTO

CRYSTAL RIVER TRANSIENT (2/26/80)

INDEX

A. SITE DESCRIPTION

- B. EVENT DESCRIPTION
 - 1. REACTOR COOLANT SYSTEM LAYOUT
 - 2. SEQUENCE OF EVENTS (HIGHLIGHTS)
 - 3. NON-NUCLEAR INSTRUMENTATION POWER SUPPLIES
 - 4. CRYSTAL RIVER DOCUMENTATION PARAMETER AVAILABILITY
 - 5. CRYSTAL RIVER LOCA PROCEDURES
 - 6. POST TMI-2 REQUIREMENTS

C. EMERGENCY RESPONSE DESCRIPTION

- 1. INSPECTION HISTORY
- 2. CRYSTAL RIVER EMERGENCY PLAN EXCERPT
- 3. EMERGENCY RESPONSE SEQUENCE OF EVENTS
- 4. INDEPENDENT MEASUREMENTS
- 5. NRC ON-SITE ORGANIZATION
- D. LESSONS LEARNED

CRYSTAL RIVER 3

| UTILITY: | FLORIDA POWER | CORPORATION | | |
|----------------|------------------------------------|------------------------------------|-------------|---|
| SITE: | FIVE UNITS | | | |
| | 1 AND 2 3 4 AND 5 | FOSSIL NUCLEAR FOSSIL (UNDER | CONSTRUC | TION) |
| LOCATION: | 7 MILES NW OF 1 80 MILES N OF 1 | CRYSTAL RIVER, TAMPA, FLORIDA | FLORIDA | |
| REACTOR: | BABCOCK & WILC 2452 MWT | OX PWR 825 MWE | - | |
| INITIAL CRITIC | ALITY: | JANUARY 14, 19 | 977 | an Terrine înst |
| COMMERCIAL OPE | RATION: | MARCH 13, 1977 | 7 | |
| CURRENT CYCLE: | | SECOND CYCLE | 1 | un ar an an an an Bhenne i Chinenne an Bhenne i Chinenne an |
| INITIAL CRITIC | ALITY, THIS CYC | LE: AUGUST 1, | , 1979 | |
| CONDENSER COOL | ING: ONCE GULF | THROUGH METHON OF MEXICO HEAT | D T SINK | |

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CRYSTAL RIVER 2/26/80 TRANSIENT SEQUENCE OF EVENTS HIGHLIGHTS INITIAL CONDITION: FULL POWER

PAGE 1 OF 4

| TIME | EVENT | CAUSE |
|----------|---|---|
| 14:23:21 | INSTRUMENT BUS FAILURE, PORV/SF AY VALVES OPEN | LOSS OF "X" NNI POWER SUPPLIES |
| 14:23:35 | AUTOMATIC REACTOR TRIP/ TURBINE TRIP | HIGH REACTOR PRESSURE DUE TO LOSS OF HEAT SINK |
| 14:25:50 | PORV ISOLATED BY OPERATOR | OPERATOR RESPONSE TO HIGH RC DRAIN |
| | | TANK LEVEL ALARM AND LOW RC PRESSURE |
| 14:26:41 | HPI AUTO INITIATION | LOW RC PRESSURE AUTO INITIATION |
| 14:26:54 | RC PUMPS SHUT DOWN | OPERATOR ACTION REQUIRED BY APPLICABLE EMERGENCY PROCEDURE |

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| | TEL OND INTEATON | TOM DE DESCRIPTIONES AUTO EN LES |
|---------------|--|---|
| TIME | EVENT | CAUSE |
| | in thirt, diff total | TREADE ACTION FROM TO A CONTRACT OF A CONTRACT. |
| 14:31:32 | RB PRESSURE HIGH (GREATER THAN 2 PSIG) | STEAM RELEASE FROM RCDT THROUGH BROKEN RUPTURE DISC |
| 14:31:59 | "A" OTSG BOILS DRY | "A" OTSG FEED FLOW CUTBACK AND EVENTUAL FEEDPUMP TRIP |
| 14:31 - 14:41 | BYPASS ES A AND B AND BALANCE HPI FLOWS BY OPERATOR | FOLLOWING APPLICABLE EMERGENCY PROCEDURE |
| 14:32 - 14:44 | OPERATOR START EMERGENCY FEEDWATER PUMPS | ENSURE FEEDWATER AVAILABLE FOR OTSG'S |
| 14:33:30 | RC PRESSURE REACHES MAXIMUM (2395 PSIG) | FULL HPI FLOW, PRESSURIZER SOLID |

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| TIME | | CAUSE |
|-------------|--|---|
| 14:34:23 | RB DOME HIGH RADIATION ALARM | OFF-GASSING OF SPILLED RCS LIQUID |
| 14:44:12 | NNI POWER RESTORED, NATURAL CIRCULATION VERIFIED | REMOVED X-NNI POWER SUPPLY MONITOR MODULE, RECLOSED BREAKERS |
| 14:44:31 | RB AUTO ISOLATION AND AUTO HPI SIGNAL | RB PRESSURE REACHED 4 PSIG DUE TO FLOW THROUGH SAFETY VALVE |
| 14:52 | HPI THROTTLED AND RCS PRESSURE REDUCED TO 2300 PSIG | OPERATOR ACTION TO ALLOW SAFETY VALVE TO RESEAT |
| 14:56:43 | RESTORED FEEDWATER TO OSTG "A" | OPERATOR ACTION TO RESTORE HEAT SINK |
| 15:17 'i | DECLARED CLASS "B" EMERGENCY (SITE EVACUATION) | FOLLOWING EMERGENCY PROCEDURE |

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CONTRACT AND SOUTH AND A 10.1111/01 PAGE 4 OF 4 1 1 REFERRENTAS TRADUCTOR CAUSE EVENT TIME 15:50 HPI FLOW TERMINATED, RCS OPERATOR ACTION UNDER SOLID PLANT PRESSURE CONTROLLED BY **OPERATION** MAKEUP AND LETDOWN FLOWS 18:05 PRESSURIZER STEAM BUBBLE OPERATOR ACTION TO RESTORE RCS PRESSURE CONTROL TO NORMAL REESTABLISHED × 18:30 SITUATION UNDER CONTROL SECURED FROM CLASS "B" EMERGENCY 21:07 STARTED B AND D REACTOR **RE-ESTABLISH RCS FORCED CONVECTION** COOLANT PUMPS COOLING AN HEAR PROPERTY AND A DATA OF A CASE OF A CAS THE PORT REPORT OF THE DEPARTMENT NERVER Y MAL DER FOR THE AL

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NON-NUCLEAR INSTRUMENTATION, POWER SUPPLIES





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CR3 KEY PARAMETERS AVAILABILITY

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| INSTRUMENT | CONTROL | |
|------------|---|---|
| NUMBER | BOARD | COMPUTER |
| RC-14A-FT | NO | NO |
| RC-14B-FT | NO | NO |
| RC-4A-TT1 | NO | NO |
| RC-4A-TT4 | NO* | NO |
| RC-4B-TT1 | . NO | NO |
| RC-4B-TT4 | NO* | NO* |
| RC1-LT1 | NO | NO |
| | INSTRUMENT NUMBER RC-14A-FT RC-14B-FT RC-4A-TT1 RC-4A-TT1 RC-4B-TT1 RC-4B-TT1 RC1-LT1 | INSTRUMENTCONTROLNUMBERBOARDRC-14A-FTNORC-14B-FTNORC-4A-TT1NORC-4A-TT4NO*RC-4B-TT1NORC-4B-TT4NO*RC1-LT1NO |

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|---------------------------|-----------|------------|----------|
| PARAMETER (Continued) | NUMBER | BOARD | COMPUTER |
| PRESSURIZER LEVEL | RC1-LT2 | NO | NO |
| PRESSURIZER LEVEL | RC1-LT3 | NO | YES |
| T COLD LOOP "A" | RC-5A-TT1 | NO | NO |
| T COLD LOOP "A" | RC-5A-TT3 | NO* | YES |
| T COLD LOOP "B" | RC±5B±TT1 | / FULLINNo | NO |
| T COLD LOOP "B" | RC+5B+TT3 | NO* | YES |
| *AVALLADILLTY IF SELECTED | 1) POLL | thr . | |
| AVAILABILITT IF SELECTED | 13 Po 14 | 110 | |

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CR3 KEY PARAMETER AVAILABILITY

| the second secon | INSTRUMENT | CONTROL | |
|--|------------|---------|----------|
| PARAMETER | NUMBER | BOARD | COMPUTER |
| Engineered Safeguards Wide Range RCS Pressure | RC-3A-PT3 | YES | NO |
| ENGINEERED SAFEGUARDS WIDE Range RCS Pressure | RC-3B-PT3 | YES | NO |
| TC WIDE RANGE LOOP A | RC-5A-TT4 | YES | NO |
| TC WIDE RANGE LOOP B | RC-5B-TT4 | YES | YES |
| OTSG "B" OPERATING LEVEL | SP-1B-LT3 | YES | NO |
| OTSG "B" STARTUP LEVEL | SP-1B-LT4 | NO | YES |
| | | | |

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|------------------------------|--|-------------|----------|
| | INSTRUMENT | CONTROL | |
| (CONTINUED) | NUMBER | BOARD | COMPUTER |
| OTSG "A" FULL RANGE LEVEL | SP-1A+LT1 | YES | NO |
| OTSG "B" FULL RANGE LEVEL | SP-1B-LT1 | YES | NO |
| OTSG "A" PRESSURE | SP-6A-PT2 | NO | YES |
| OTSG "B" PRESSURE | SP-6B-PT1 | YES | YES |
| HIGH PRESSURE INJECTION | na ann an t-thairte. Tá tha | al to | |
| FLOW | MU-23-DPT3 | YES | NO |
| HIGH PRESSURE INJECTION | tre char to r | f categoria | |
| FLOW | MU-23-DPT4 | YES | NO |
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| A. C. | INSTRUMENT | CONTROL | |
|--|-------------|---------|----------|
| PARAMETER | NUMBER | BOARD | COMPUTER |
| (CONTINUED) | | | |
| LOW PRESSURE INJECTION | | | |
| FLOW | DH-1-DPT2 | YES | NO |
| CORE FLOOD TANK "B" | | | |
| LEVEL | CF-2-LT2 | YES | YES |
| | | | |
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| $(1)_{i \in \mathbb{N}} (1)_{i \in \mathbb{N}} (i)$ | | | |
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| $(\mathbf{I}_{i},t_{i}) \in \mathbb{R}^{n} \to \mathbb{R}^{n} \oplus \mathbb{R}^{n} \to \mathbb{R}^{n} \oplus \mathbb{R}^{n} \to \mathbb{R}^{n} \oplus \mathbb{R}^{n}$ | .1. 10.1.11 | ΎΙ. | |
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CRYSTAL RIVER 3 LOSS OF COOLANT EMERGENCY PROCEDURE EP-106

| 2.0 | LEAK OR RUPTURE WITHIN CAPABILITY OF HPI SYSTEM TO MAINTAIN RCS PRESSURE AND PRESSURIZER LEVEL |
|-------|---|
| 2.1 | SYMPTOMS |
| 2.1.1 | PRESSURIZER LEVEL DECREASING (ALARM AT 160 IN.).# |
| 2.1.2 | RC PRESSURE DECREASING (ALARM AT 2055 PSIG),# |
| 2.1.3 | MUT LEVEL DECREASING (ALARM AT 55 IN.). |
| 2.1.4 | HIGH RADIATION ALARM (RM-A6, RM-A1) |
| 2.1.5 | RB SUMP LEVEL INCREASING (RB SUMP PUMP TROUBLE ALARM). |
| 2.1.6 | RB PRESSURE AND TEMPERATURE INCREASING. |
| 2.1.7 | MAKEUP FLOW INCREASING (ALARM AT 160 GPM).# |
| | |

#MAY NOT OCCUR ON SMALL BREAKS.

CRYSTAL RIVER 3 LOSS OF COOLANT EMERGENCY PROCEDURE EP-106

| 2.2 | AUTOMATIC ACTION |
|-------|---|
| 2.2.1 | REACTOR-TURBINE TRIP (LOW RC PRESSURE 1800 PSIG)# |
| 2.2.2 | HPI ACTUATION (RC PRESSURE 1500 PSIG)# |
| 2.2.3 | LOSS OF RB PURGE IF IN PROGRESS (RM-A1 HIGH ALARM). |
| 2.2.4 | OTSG LEVEL GOES TO LOW LEVEL LIMIT (30 IN. ON STARTUP RANGE).# |
| 2.2.5 | STEAM HEADER PRESSURE CONTROL TRANSFER TO 1,010 PSIG.# |
| | 양양 같은 것이 아파는 것이 있는 것을 하는 것을 해 들었는 프 |
| 2.2.6 | SUMP PUMP AUTO START# |
| 2.2.7 | RB ISOLATION# |

#MAY NOT OCCUR ON SMALL BREAKS.

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CRYSTAL RIVER 3 LOSS OF COOLANT EMERGENCY PROCEDURE EP-106

| 2.3 | IMMEDIATE ACTION |
|-------|--|
| 2.3.1 | VERIFY AUTOMATIC ACTION. |
| 2.3.2 | IF HPI ACTUATION IS CAUSED BY LOW RC PRESSURE, TRIP ALL OPERATING RC PUMPS. |
| 2.3.3 | IF HPI HAS INITIATED DUE TO HIGH RB PRESSURE (4 PSI), MONITOR RC PRESSURE AND IMMEDIATELY TRIP ALL RC PUMPS AT AN RC PRESSURE OF 1500 PSI. |

2.3.4 CLOSE LETDOWN ISOLATION VALVE (MUV-49),

CRYSTAL RIVER 3 LOSS OF COOLANT EMERGENCY PROCEDURE EP-106

2.4 FOLLOW-UP ACTION

2.4.1 IMMEDIATELY UPON COMPLETION OF NECESSARY IMMEDIATE MANUAL ACTION STEPS, ALTERNATE INSTRUMENT CHANNELS SHALL BE CHECKED TO CONFIRM THE KEY PARAMETER READINGS THAT ARE MARKED WITH AN ASTERISK (*), WHERE ALTERNATE CHANNELS ARE AVAILABLE.

> CAUTION: MONITOR TH AND THE IN-CORE THERMOCOUPLES THROUGHOUT THE FOLLOWING ACTIONS. IF SUPERHEATED CONDITIONS DEVELOP, PROCEED IMMEDIATELY TO SECTION 5.0 (INADEQUATE CORE COOLING),

2.4.2 IF RCV-10 (ELECTROMATIC RELIEF VALVE) INDICATES OPEN (ANNUNCIATOR ALARM) AND RC DRAIN TANK PRESSURE AND LEVEL ARE INCREASING, CLOSE RCV-11 (ELECTROMATIC RELIEF VALVE BLOCK VALVE).

2.4.4 PLACE RB SUMP PUMP CONTROL SWITCHES IN "PULL-TO-LOCK" AND CLOSE WDV-3 AND 4 (SUMP PUMP DISCHARGE VALVES),

2.4.5 SECURE RC DPAIN TANK AND CLOSE WDV-94 AND 62 (RCDT PUMP DISCHARGE VALVES) AND WDV-60, 61, AND 407 (RCDT VENTS).

CRYSTAL RIVER 3 LOSS OF COOLANT EMERGENCY PROCEDURE EP-106

- 2.4.6 IF THE HPI SYSTEM HAS ACTUATED BECAUSE OF LOW PRESSURE CONDITION, IT MUST REMAIN IN OPERATION UNTIL ONE OF THE FOLLOWING CRITERIA IS SATISFIED.
- 2.4.6.1 THF _PI SYSTEM IS IN OPERATION AND FLOWING AT A RATE IN EXCESS OF 1,000 GPM IN EACH TRAIN AND THE SITUATION HAS BEEN STABLE FOR 20 MINUTES

(OR)

2.4.6.2

ALL HOT AND COLD LEG TEMPERATURES* ARE AT LEAST 50° SUBCOOLED PER CURVE 2.3A OF OP-103, PLANT CURVE BOOK, AND THE ACTION IS NECESSARY TO PREVENT THE INDICATED PRESSURIZER LEVEL* FROM GOING OFF-SCALE HIGH. IF 50° SUBCOOLING CANNOT BE MAINTAINED, THE HPI SHALL BE REACTIVITED.

POST TMI-2 REQUIREMENTS

A. TMI-2 SHORT TERM LESSONS LEARNED:

18 COMPLETED, 2 DEFERRED UNTIL 3/80 OUTAGE

DEFERRED:

DIVERSITY OF CONTAINMENT ISOLATION POSITION INDICATION FOR PORV AND SAFETY VALVES

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COMPLETED (RELEVANT TO EVENT): SUBCOOLING METER SHIFT TECHNICAL ADVISOR ONSITE TECHNICAL SUPPORT CENTER POST ACCIDENT SAMPLING IMPROVED REACTOR OPERATIONS (4 ITEMS)

B. BULLETINS AND ORDERS TASK FORCE:

ALL SHORT-TERM COMPLETED LONG-TERM IN LOCK STEP WITH OWNERS GROUP

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REGION II

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OFFICE OF INSPECTION AND ENFORCEMENT EMERGENCY PLANNING INSPECTIONS

...!

| DATE | INSPECTION REPORT NUMBER | NON-COMPLIANCE |
|--------------|--|---|
| JAN 28, 1980 | SPECIAL IE-NRR LESSONS LEARNED SITE VISIT | 0 |
| DEC 7, 1979 | SPECIAL REGION II IE TEAM INSPECTION 50-302/79-50 | 1 - MEDICAL TRAINING |
| FEB 23, 1979 | ROUTINE INSPECTION 50-302/79-11 | 0 |
| JAN 26, 1979 | ROUTINE INSPECTION 50-302/79-7 | 2 - AUDIBILITY OF EVACUATION ALARM: PRO- |

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2 - AUDIBILITY OF EVACUATION ALARM; PRO-VIDING PORTAL MONITOR TO SURVEY PERSONNEL UPON EVACUATION Penning Incorporate SH 2/29-2

CRYSTAL RIVER EMERGENCY PLAN

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SYMPTOMS

CLASS A (ALERT)

- . SUSTAINED HIGH RADIATION ALARM
- . CONTAINMENT EVACUATION ALARM
- . RADIATION LEVEL 100 MR/HR
- . AIRBORNE ACTIVITY 1.0 x 10⁻⁹ UCI/CC
- . CONTAMINATION OUTSIDE RCA OR GAS EFFLU-ENT ALARM

ACTIONS

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CLASS A (ALERT) ACTIONS

- SECURE AFFECTED AREA
- NOTIFY PLANT MANAGER
 - CALL NRC AND STATE OF FLORIDA

ACTIVATE EMERGENCY ORGANIZATION

PD-103_11

CLASS B (SITE) OF THE HEALTH AND THE THE THE THE THE CLASS B (SITE) ACTIONS

中国中国国立中国的中国。 拉出生性知识

- . LOCA
- . WHOLE BODY DOSE AT PLANT COMPANY Assure Safe Shutdown BOUNDARY - 250 MR . EVACUATE PERSONNEL AS NECESSARY

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EVALUATE SEVERITY OF RELEASES NOTIFY STATE OF FLORIDA AND NRC

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CLASS C (GENERAL)

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WHOLE BODY DOSE AT SITE BOUNDARY - 250 MR

CLASS C (GENERAL) ACTIONS

Perform Class B Actions Request Assistance State of Florida and NRC

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EMERGENCY RESPONSE SEQUENCE OF EVENTS CRYSTAL RIVER - FEBRUARY 26, 1980

| Time | INITIATING EVENT | ACTIONS |
|-------|---|--|
| 14:23 | Power FAILURE | Control Room (Operator) Assessment |
| 14:24 | REACTOR & TURBINE TRIP | RAD MONITORING SURVEILLANCE OF RADIATION LEVELS INITIATED |
| 14:35 | INCREASING RB & RC & RB RAD DOME MONITOR | RAD TECHS HELD ONSITE - SURVEYS INPLANT INITIATED - RII NOTIFIED |
| 14:45 | RB ISOLATION | CONTROL ROOM ASSESSMENT - EMERGENCY COORDINATOR POSITION ASSUMED - NRC HOS INFORMED (HOTLINE) |
| 14:45 | 50 R/HR RB DOME MONITOR | RADIATION SURVEY TEAM INPLANT BEGINS SURVEYS - RII Emergency Center Activated |

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IME INITIATING EVENT (CONTINUED)

14:50-15:05 PLANT MANAGER TO CONTROL ROOM

15:05 PLANT MANAGER TO TECHNICAL SUPPORT CENTER - TECH SUPPORT CENTER AND OPERA-TIONS SUPPORT CENTER ACTIVATED

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DECISION TO DECLARE CLASS B EMERGENCY BASED ON LOCA - REACTOR PROTECTIVE ACTIONS DISCUSSED

EMERGENCY ORGANIZATION ACTIVATION INITIATED -EMERGENCY MANAGEMENT TEAM (EMT) ACTIVATED IN IRC HQTRS

15:17 EVACUATION ANNOUNCEMENT UNITS 1, 2, 4, AND 5 NOTIFED - UNIT 3 NON-ESSENTIAL PERSONNEL LEAVE - RADTECHS SURVEY ALL PERSONNEL LEAVING RCA AND ALL PERSONNEL PASS PORTAL MONITOR AT GUARD STATION -UNITS 1, 2, 4, 5 ON STANDBY FOR IMMEDIATE EVACUATION - NRC NOTIFIED

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| | | Art President Travens 14 - 3 of 6 |
|-------------|-------------------------------------|---|
| TIME | INITIATING EVENT | PAR PORTA CONTROL FOR |
| (CONTINUED) | | Construction MPC Received |
| 15:20-15:30 | - | STATE WARNING POINT CALLED BY PLANT MANAGER - |
| | | Stresses NO Releases |
| 15:30-16:30 | | STATE WARNING POINT INITIATES STATE OF FLORIDA |
| | | EMERGENCY PLAN WITH OTHER AGENCY NOTIFICATIONS |
| 15:30 | | NRC REGION II ACTIVATES RESPONSE TEAM - |
| 15.50 | | NRC HEADQUARTERS UPGRADES LEVEL |
| 15:45 | | LICENSEE EMERGENCY ORGANIZATION TEAM |
| | Intrascio Lesna | MEETING TO DISCUSS ACTIONS |
| 16:00 | _ | LICENSEE DIRECTS PLANT SECURITY TO ESTAB- |
| | and then be an tourise | LISH CONTROL POINT AT SITE ACCESS ROAD - |
| | Unem | ENVIRONMENTAL SURVEY TEAMS BEGIN SURVEYS - TSC MEETING ON HOW TO ESTABLISH BUBBLE IN |
| | an former in house | PRESSURIZER |
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|---------------------|--|---|
| IIME (Continued) | INITIATING EVENT | LIVE CONTRACTIONS |
| 16:00 | | NRC INITIATED NOTIFICATIONS COMPLETED |
| 16:30 | RADIATION LEVELS DECREASE IN RB | STATE WARNING POINT DIRECTOR GIVEN STATUS Report By Plant Manager |
| 18:00 | | RII RESPONSE TEAM ONSITE |
| 18:05 | BUBBLE REESTABLISHED | |
| 18:30 | - | LICENSEE SECURED FROM CLASS B |
| 18:45 | STATE MOBILE LAB ARRIVES FROM ORLANDO | EMT CLOSED DOWN & RII DIRECTOR ASSUMES CONTROL |
| 19:00 | RII MOBILE LABORATORY | BEGIN OPERATIONS AND CONFIRM FPC SAMPLES |
| | | Takin Premis Linn Land |
| | C-3 | The source of the second states of the second |

in that the Association THE HELE PORT PHERIES 5 OF F The set the parts INITIATING EVENT ACTIONS TIME (CONTINUED) 21:00 RII DIRECTOR AND SUPPORT TEAM ARRIVES 21:07 RC PUMPS START - COOLDOWN BEGUN STATE WARNING POINT NOTIFIED - BEGIN RECOVERY OPERATIONS UNDER NRC DIRECTION L. 22:00 NRC SITE TEAM PROVIDES FOLLOWUP BRIEFING TO STATE WARNING POINT 22:50 NRC SITE TEAM INFORMS GOVERNOR GRAHAM (FLORIDA) OF PLANT CONDITIONS 23:05 NRC SITE TEAM INFORMS MAYOR - CRYSTAL RIVER, FLORIDA OF PLANT CONDITIONS construction of the second second that the month on Philip C-3 AT TH Incore the Frank Roman

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NRC SITE TEAM INFORMS MAYOR - YANKEETOWN, FLORIDA OF PLANT CONDITIONS

NRC SITE TEAM INFORMS MAYOR - INGLIS, FLORIDA OF PLANT CONDITIONS

NRC SITE TEAM INFORMS SHERIFF'S OFFICE, CITRUS, COUNTY OF PLANT CONDITIONS

TIME INITIATING EVENT (CONTINUED)

23:20

23:40

23:50

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NRC

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INDEPENDENT MEASUREMENTS CRYSTAL RIVER

REGION II MOBILE LABORATORY UNIT 21 ARRIVED AT THE CRYSTAL RIVER SITE ON FEBRUARY 26, 1980, AT 8:30 P.M. THE LABORATORY WAS UTILIZED FOR INDEPENDENT COUNTING OF INPLANT AND ENVIRON-MENTAL SAMPLES BY GAMA RAY SPECTROSCOPY.

INPLANT SAMPLES ANALYZED INCLUDED:

- PARTICULATE FILTER AND CHARCOAL CARTRIDGES FROM AL VENT MONITOR.
- 2. LIQUID SAMPLES FROM WASTE TANK AFTER TRANSFER OF LIQUID FROM THE REACTOR BUILDING SUMP.
- 3. LIQUID SAMPLES FROM EVAPORATOR CONDENSATE STORAGE TANK.

NRC MEASUREMENTS VERIFIED THE ASSAYS BY THE LICENSEE AND INDICATED THAT RELEASES FOLLOWING THE REACTOR TRIP WERE WITHIN REQUIREMENTS AND TYPICAL OF NORMAL OPERATION.

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ENVIRONMENTAL SAMPLES COUNTED INCLUDED PARTICULATE AND CHARCOAL CART-RIDGE SAMPLES FROM ONSITE LOCATIONS IN THE PREVAILING WIND DIRECTION. THESE SAMPLES COVERED THE PERIOD FROM 1540 ON FEBRUARY 26, 1980 TO 0425 ON FEBRUARY 27, 1980.

A PARTICULATE FILTER AND CHARCOAL SAMPLE FROM A STATE OF FLORIDA AIR SAMPLING STATION IN THE CITY OF CRYSTAL RIVER WAS ALSO ANALYZED. ALL ENVIRONMENTAL SAMPLES WERE NEGATIVE WITH NO MEASURABLE CONTRIBUTION OF RADIOACTIVITY FROM THE CRYSTAL RIVER PLANT.

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INDEPENDENT MEASUREMENTS

BY. STATE AND FEDERAL AGENCIES

ADDITIONAL ENVIRONMENTAL MEASUREMENTS WERE MADE BY THE STATE OF FLORIDA, DEPARTMENT OF HEALTH AND REHABILITATIVE SERVICES, UNIVERSITY OF FLORIDA AND THE U. S. ENVIRONMENTAL PROTECTION AGENCY. THESE MEASUREMENTS INCLUDED DIRECT RADIATION WITH TLD'S AND PRESSURIZED ION CHAMBERS, PARTICULATE RADIOACTIVITY AND RADIOIODINE IN AIR, AND RADIOACTIVITY ON VEGETATION. NO RADIOACTIVITY LEVELS ABOVE NORMAL BACKGROUND LEVELS WERE OBSERVED, EPA PERSONNEL WILL REMAIN IN THE VICINITY OF THE CRYSTAL RIVER PLANT UNTIL CONTAINMENT HAS BEEN PURGED.



February 27, 1980

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PRELIMINARY LESSONS LEARNED FROM CRYSTAL RIVER FEBRUARY 26 ACCIDENT

- TECHNICAL SUPPORT CENTER IS KEY ELEMENT IN ACCIDENT SUPPORT MUST BE SIZED TO SUPPORT LICENSEE & NRC ACTIVITIES
- . COMMUNICATIONS BETWEEN TSC AND CONTROL ROOM MUST BE EXPANDED NRC HEADQUARTERS COMMUNICATIONS SHOULD FOCUS ON THE TSC
- OFFSITE TECHNICAL SUPPORT CENTER (EOC) MUST BE EXPANDED TO HANDLE FEDERAL RESPONSE
- . NRC HEADQUARTERS RESPONSE CENTER MUST CONTROL QUESTIONS AND IMPLIED ORDERS AND BE SENSITIVE OF IMPACT ON PLANT PERSONNEL DURING INITIAL STAGES OF ACCIDENT
- . NRC HEADQUARTERS, FOLLOWING TRANSFER OF AUTHORITY TO SITE TEAM, MUST CLEAR STATEMENTS WITH SITE TEAM TO ASSURE ACCURACY OF INFORMATION

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IE BULLETIN 79-27

LOSS OF NON-CLASS I - E INSTRUMENTATION

AND CONTROL POWER BUS DURING OPERATION

ISSUED NOV. 30, 1979

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RESPONSES DUE WITHIN 90 DAYS (1.e. BY FEB. 28, 1980), WE TYPICALLY ALLOW A FEW DAYS FOR MAILING

REQUIRED REVIEW OF ALL BUSSES SUPPLYING POWER TO INST. OR CONTROL SYST. IMPORTANT TO ACHIEVING COLD SHUTDOWN

- IDENTIFY ALARM/INDICATION FOR LOSS
- IDENTIFY LOADS CONNECTED TO BUS
- DESCRIBE DESIGN MODIFICATIONS PROPOSED

REQUIRED REVIEW OF EXISTING PROCEDURES FOR LOSS OF THOSE BUSSES

- DIAGNOSTIC/ALARM/INDICATION/STRPTONS TO! LOSS OF BUS
- USE OF ALTERNATE INDICATION POWERED FROM OTHER BUSSES
- METHODS FOR RESTORING POWER TO BUS
- DESCRIBE DESIGN FOR PROCEDURE MODIFICATION RESULTING FROM REVIEW

RE-REVIEW IE CIRCULAR 79-02 (FAILURE OF VITAL AC POWER SUPPLIES) IN LIGHT OF ABOVE. DESCRIBE PROPOSED DESIGN OR PROCEDURE CHANGES

STATUS OF RESPONSES (3/3/80)

| THI - 1 | RESPONSE MAILED 2/29. SAYS MATTER IS UNDER REVIEW, WILL PROPOSE SUITABLE MODIFICATIONS IF DETERMINE SIMILAR FAILURE IS POSSIBLE, AND WILL PROPOSE SCHEDULE. NO DATE COMMITMENT. |
|-------------|---|
| TMI - 2 | NO RESPONSE RECEIVED, NO EXTENSION REQUESTED. |
| DAVIS BESSE | RESPONSE SENT 3/3. SAYS WILL RESPOND BY 5/15/80. NO FORMAL REQUEST FOR EXTENSION RECEIVED, OTHER THAN THIS REPLY. |
| ANO - 1 | PLAN TO REVISE RESPONSE AND PROPOSE COMPLETION DATE AFTER HEARING RESULTS OF 3/3 MEETING WITH OTHER LICENSEES AND 3/4 MEETING WITH NRC. (VERBAL ONLY, NO FORMAL REQUEST) |
| RANCHO SECO | RECEIVED RESPONSE 3/3. SAYS NO DESIGN, PROCEDURE, OR ADMINISTRATIVE CONTROL CHANGES NEEDED. |
| OCONEE | RESPONSE WILL BE RECEIVED (R II) ON 3/7. |
| CR - 3 | RESPONSE WILL BE RECEIVED (R II) ON 3/10. |

IE BULLETIN 79-27

LOSS OF NON-CLASS I - E INSTRUMENTATION

AND CONTROL POWER BUS DURING OPERATION

ISSUED NOV. 30, 1979

·

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| CR - 3 | RESPONSE WILL BE RECEIVED (R II) ON 3/10. |

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